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## ORIGINAL LECTURES.

### SOME POINTS IN THE DIAGNOSIS BETWEEN PSOAS ABSCESS, ANEURISM, HERNIA, AND MALIGNANT DISEASE.

*A Clinical Lecture delivered at the Hospital of the University of Pennsylvania.*

BY JOHN ASHHURST, JR., M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA.

(Reported by William H. Morrison, M.D.)

GENTLEMEN: The first case which I bring before you to-day is of great interest in regard to the question of diagnosis. I cannot say that I am absolutely certain in my own mind as to the nature of the case, although, after a very careful examination, I have come to a conclusion different from that which I at first entertained. This patient presented himself at the hospital one week ago with a large tumor of the groin which you now see. I made a hasty examination just before the last lecture, and my impression was that it was a case of malignant disease, probably sarcoma, with cystic degeneration, involving some of the glands of this region. Had I brought the patient before you then, I should have said, from the hasty examination which I had made, that this was a case of malignant tumor. After the lecture I examined the patient more carefully, and then found reason to change my opinion. At the same time, I say that the case is an obscure one, and I am not absolutely positive as to my diagnosis, although I believe that I have determined the correct nature of the affection. This will, however, be shown by the exploration which I intend to make.

The various affections which might cause a tumor in this position are: 1. A solid tumor, malignant or otherwise; 2. Aneurism of the upper portion of the femoral artery; 3. Femoral hernia; 4. A cyst of some kind; 5. A psoas abscess, originating either in the sheath of the psoas muscle, or having made its way into the sheath of that muscle gradually passing downwards until it appears in this situation; and, 6. Varix of the saphena vein, for which, however, this tumor could hardly be mistaken. The points on which we rely in making the diagnosis are partly anatomical and partly dependent on the results of careful examination.

Let us first consider aneurism of the femoral artery. Although this is in the course of the artery, I do not think that it is an aneurism. There is no pulsation whatever, which could hardly be the case in an aneurism as soft as this tumor is. There is no bruit. On placing my ear over the tumor, no sound is heard. In some positions of the tumor, there is a slight transmission of sound from the artery, but there is no characteristic bruit. There is no swelling of the limb, nor change in the pulse below the tumor. Finally, the artery can be traced on to the tumor to a certain extent, and then it seems to disappear beneath it. If this were an aneurism, we should probably find that it was more or less continuous with the line of pulsation above, although, of course, a sacculated aneurism might overlap the artery to such an extent as to appear to be a separate tumor.

Next, in reference to the points in favor of malignant growth. In the first place, the history points somewhat in that direction. The patient can give no cause for this swelling. He is aware of no injury which might have caused it. The only history is that it began as a small lump above and grew downwards. It was also a soft tumor. This fact would tend to show that it was not a malignant growth. If this were a sarcoma with secondary cyst, it would at first have been a hard tumor and the softness associated with the cyst would have been a secondary development.

Then as to the question of hernia. This is not in the position of a femoral hernia. The hernia comes down on the inner side of the femoral vessels, and when it is strangulated the constriction is at the junction of Hey's and Gimbernat's ligament. Tracing this tumor upwards, I find that on the inner side of the femoral vessels, Poupart's ligament is perfectly distinct, but on the outer side of the vessels there is a marked extension of the swelling, which is very tense, elastic and fluctuating, and which has passed a little above Poupart's ligament. This of itself would negative the idea of femoral hernia. On the other hand, we know that psoas abscess comes down in the sheath of the muscle, often pressing the fibres of the muscle apart, and is almost always found on the outer side of the vessels. Here then is an anatomical point which would lead us to think that this was an abscess. There is another symptom present which is observed in both hernia and abscess, that is, a marked impulse is transmitted to this tumor when the patient coughs. This I cannot show to you now as the patient is under ether. This was the first point which diverted my mind from the theory of malignant growth. This is seen in hernia and in any large abscess originating in the abdominal cavity. A solid tumor situated below Poupart's ligament would not receive an impulse from coughing. This point leads us almost certainly to hernia or a collection of fluid, and the anatomical point in regard to the position of the tumor in reference to the femoral vessels would exclude hernia.

Our diagnosis is therefore narrowed down to either psoas abscess or a cyst of some kind originating within the abdomen. It might be a hydatid cyst, for these are found in all parts of the body. There are, however, some points which favor abscess rather than a cyst of this kind. One of these is the œdema over the prominent portions of the tumor. This is very significant of abscess. The tumor is then evidently pointing. In this the tumor has changed its appearance since last week; there are now several prominent nodules, like grapes, which were not present a week ago. They were rather more prominent two days ago than they are at present. By carefully feeling them, I can satisfy

myself that at these points the subcutaneous fascia has given way, allowing the fluid to come to the surface. There are three or four points at which the swelling is beginning to point, but these are becoming fused together. If the swelling were left alone, it is probable that in two days more there would be only one large nipple-like process.

The tumor extends downwards to a considerable distance and is elastic at all points; last week it was much more solid. It appears to be limited to the position of the adductor group of muscles. I believe that this is a collection of pus beneath the muscles pushing them forwards.

There is one other point to which I may call attention. In psoas abscess, we often have a large collection of pus above Poupart's ligament and a small one below. In the present instance, the collection below is larger, but at the same time there is a fluctuating tumor in the iliac fossa, above the ligament. When I press upon the upper one, I find that the tension of the lower swelling is increased.

As I have said, after a careful examination and a consideration of all these points, I have come to the conclusion that this is a psoas abscess. I, however, can find no cause for such a condition. There is no evidence of spinal disease, and the patient is able to walk very well. Abscesses sometimes originate in the sheath of the psoas muscle from some irritation or from external influences without any connection with bone disease. When the abscess results from disease of the spine, it is, as a rule, better to let it alone. If there is no disease of the bone, or if such disease has apparently been cured, for abscess may remain as a sequel of disease of the spine, you may open the abscess and adopt some means to prevent a continuance of the suppuration.

What I propose to do first, is to confirm or disprove the diagnosis by the use of the exploring-needle. I am not very enthusiastic in the use of this instrument, for I believe that the surgeon should be able, in most cases, to make the diagnosis without it. At the same time, when the diagnosis is sufficiently formed to enable the surgeon to determine upon a plan of treatment, the needle may be used. If I were in doubt as to whether this was an aneurism or an abscess, I should hesitate to use the exploring-needle, because, although it would clear up the diagnosis, it might injure the patient. In the same way with hernia. If I thought that this might be a malignant tumor, I should hesitate in the use of the exploring-needle, unless I was prepared to adopt some radical measures for its removal. In aneurism, the use of the needle weakens the wall of the sac and increases the danger of rupture. In malignant growth, the needle produces irritation and probably increases the rapidity of growth. I think that the surgeon should not introduce the needle, unless he is prepared to do something further, if not immediately, at least within a short time.

If a few drops of pus follow the introduction of the exploring-needle, I shall introduce the aspirator, and if the instrument will work satisfactorily, remove the fluid with it. If this does not succeed, I shall make a small opening and get rid of the pus in this way. Having removed the pus, I intend to inject the cavity with a solution of carbolic acid (one to thirty) to hyperdistention, as was recommended by the late Mr. Callender. The object of this is not to carrry out any antiseptic method, and the advocates of the so-called antiseptic mode of treatment would not accept it as an antiseptic measure. The late Mr. Callender recommended this plan of treatment for the purpose of producing a healthy stimulation of the walls of the abscess, to increase the likelihood of healing, and, perhaps, prevent the recollection of the pus. I have used this method on several occasions, and usually with satisfactory results. If there were active disease of the spine, however, such treatment would be of little use, because the abscess would soon refill.

If I find no pus, I shall proceed no further at present, and the question will then arise whether or not we shall attempt to remove the tumor. I do not think that such an attempt would be advisable, for the tumor evidently extends into the abdomen. I, however, have as firm a faith as it is possible to have without sight, that we shall find pus.

I now introduce the exploring-needle, and at once pus, of the character found in a cold abscess, escapes. I shall now introduce the canula of the aspirator, but, as you see, the tube soon becomes clogged with some shreds of broken-down tissue. I shall therefore be compelled to make an opening with a bistoury. The opening that I make is a very small one. A large quantity of pus is escaping.

This ought to be a very instructive case to you. As I have already said, if I had brought this patient before you last week, after the hasty examination which I had made, I should have said that it was a case of malignant tumor, simply because I had not made a thorough examination. A careful examination satisfied me that in all probability it was an abscess. The neglect of this thorough examination would have led to an error of diagnosis. The anecdote is told of the Russian surgeon, Pirogoff, that on returning from a long journey through the cold he found in his waiting-room a patient with a fluctuating tumor in the region of the axilla, and suffering intense pain. It was, apparently, a large abscess. Desirous of giving relief as soon as possible, he introduced a knife, and a free flow of arterial blood followed. He had opened an aneurism. Mistakes of this kind have been made by the most eminent surgeons. But I believe that Mr. Holmes is right in saying that the mistakes have been due to the omission of some point of a careful examination. I would not say that the surgeon should never make a mistake, but we can say, from a study of the cases in which a mistake of this kind has been made, that some point has been omitted in the investigation. It is not the fault of Nature, but the fault of the surgeon who misinterprets Nature, that these mistakes are made.

I am now getting to the end of this collection, for blood is beginning to appear. Sometimes, if you continue, you can in these cases get pure blood from the wall of the sac. In making pressure, it is better to use a sponge than the unprotected fingers.

I am now ready to wash this out. The injection is made with an ordinary gum bag, holding about six ounces. The first bagful of fluid will be pressed out, but in the remaining injections the fluid will be allowed to remain, and we shall distend the sac to a greater extent than it was distended before it was opened, so that

the liquid shall come in contact with every part of the interior of the cavity. The liquid will then be again carefully pressed out, and a simple dressing applied.

If, in spite of this treatment, the pus continues to collect, I shall probably make a counter-opening, and introduce a drainage-tube. We shall probably prevent the reformation of pus to a certain extent by the use of this injection.

Having removed the carbolic acid solution, the opening is dressed with a little oiled lint, covered with oiled silk; a compress of oakum is placed over it, and a spica bandage is applied in order to make slight pressure. The bandage is put on with the limb somewhat flexed, so that when it is straightened the pressure will be increased.

## ORIGINAL ARTICLES.

### ON TUBERCULOSIS OF BONES AND JOINTS, AND ITS TREATMENT BY IGNIPUNCTURE.

BY ROSWELL PARK, A.M., M.D.,

PROFESSOR OF SURGERY IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO.

I DESIRE to begin my paper with a few general propositions, to be elaborated in its course as far as time and space may allow.

1st. Many affections of bone essentially inflammatory in their nature are considered to be simply affections of the periosteum, or are ascribed to rheumatism, or are overlooked until irreparable damage has been done.

2d. Excluding rheumatism, syphilis, and malignant disease, the great majority of chronic bone affections either have tuberculosis as their immediate cause, or else during their course acquire a tuberculous character by appreciable pathological processes.

Indeed, one might almost paraphrase Niemeyer's dictum of a few years ago, and say—"The chief danger for anyone suffering from bone disease is that it may become tubercular,"—supposing, of course, that it was not originally so.

3d. Certain of the *acute* bone diseases have so much of the tubercular character that we cannot well separate the two—*e. g.*, acute osteomyelitis.

4th. Accepting phthisis pulmonum as the commonest type of tuberculous disease, we shall find remarkable resemblances between diseases of this type in bone and lung, just as there is remarkable resemblance of anatomical structure. Mr. Savory has shown[1] this to advantage. The cancellous structure much resembles the parenchyma of lung-tissue; both are eminently spongy. In both a vascular halo surrounds the mass of tubercle, and in each, by the breaking down of deposit, a cavity is formed. The pleura bears much the same anatomical resemblance and physiological relation to the lung that the synovialis does to the bone-end; just as pleuritis is set up in phthisis, so is synovitis in tuberculous ostitis; just as adhesions tend to form in the pleural cavity, so do they in the synovial also; just as obliteration of internal veins causes prominent subcutaneous veins about the chest, so are the superficial veins enlarged about a tumor albus; just as a tubercular pleuritis may lead to an empyæma with all its disastrous consequences, so may a tubercular synovitis lead to a pyarthrosis (empyæma of the joint) with fungous ulceration and the like. In almost every feature, then, are the variable progress and effect of tubercle in bone and lung alike. Furthermore, as in the larger number of cases the tubercular affection seems to locate by preference in the extremities of the lungs—*i. e.*, the apices, so do we find that in bones it is most common in the vicinity of joints.

Despite the teachings of many English and American writers, I think we are compelled to acknowledge that the majority of chronic joint affections take their origin from diseased bone in their neighborhood. Barwell and others would have us understand that in morbus coxæ, for instance, the primary trouble is usually a synovitis; but it seems to me that a careful study of early symptoms and anatomical appearances must lead us to accept the views and teachings of the German and French writers, who, like Volkmann, Koenig, Kocher, and Lannelongue hold in striking accord that most of these joint troubles begin, not as arthropathies, but as osteopathies, and are preceded by a well-defined ostitis or osteomyelitis.

Various forms of primary bone trouble may lead to fungous joint disease; most frequent is fungous ostitis, which spreads by continuity of structure along the periosteum and capsular insertion. If it be a suppurative ostitis (which is less often observed, and may be mistaken for a suppurative osteomyelitis or "ostitis profunda"), it will usually occur at an age when the epiphyses are still well marked, and will then lead to purulent infiltration of the same with only a collection of serum in the joint, though perforation *may* ensue. Chronic suppurative osteomyelitis gives rise to the same condition by spreading, from continuity of structure, along the periosteum, or else, more rarely, perforation into the joint occurs. So, too, may a suppurative periostitis give rise to a condition much resembling the above. In all forms the joint affection increases in severity *pari passu* with the primary bone disease. Finally, the joint may be involved purely through necrosis of a bone-end, usually central. The more chronic the bone disease, the more likely it is to be masked by the more conspicuous joint affection; whereas, the more acute the inflammation in the bone, the more likely is it to be recognized. Moreover the disturbance in the joint may take place very early, even almost before the periosteum has become involved.

In other words, the most common primary alteration in bone is that known to the Germans as "ostitis fungosa." The cancellous structure is softened, the number of bony trabeculæ notably reduced, and replaced by a soft, vascular, young connective tissue. The extension into the joint is made by perforation by a similar process.

How one may recognize primary, but chronic ostitis of joint-ends is an important question. It is known that there are certain points of tenderness most frequently met with about inflamed joints. Naturally, points of peculiar sensitiveness to pressure are also symptomatic of osteal trouble. So it is well to em-

[1] Lancet, November 4, 1882.

phasize that circumscribed ostitis commonly occurs at those points to which attention has been thus called; the internal condyle of the femur, the external condyle and greater tuberosity of the humerus, the internal malleolus, for example. Moreover, the nearer the local affection to the joint surface the greater will be the sympathetic disturbance. Sometimes incapacity or limitation of motion is the first sign which attracts attention. Sooner or later atrophy of muscles becomes a prominent and diagnostic feature. I think it is now universally accepted that no bone trouble can long persist (with certain rare exceptions) without atrophy of soft parts as an accompanying feature, though sufficient stress is not laid upon the fact in the common teaching of the subject. As a rule, too, a joint may be incapable of actively functionating, even to a diagnostic degree, and yet permit a wide range of passive motion.

5th. I would emphasize the diagnostic significance of "starting" (osteocopic) pains at night; these are too often confounded with those of syphilis, but are to be differentiated by the entire absence of the other signs or symptoms of specific disease.

As the primary ostitis progresses, the symptoms of ordinary synovitis are added to those already present. Such a synovitis is peculiarly stubborn, though, perhaps, intermittent. This is even true to such an extent that when an apparently chronic synovitis (hydrops articuli) becomes intermittent there is good reason to suspect a bone lesion behind it. To this fact Roser has called particular attention. In such a case, with each slight exacerbation there is an obstinacy to treatment that seems most surprising.

Inside of the joint suppuration or proliferation may take place, at times, with very little apparent disturbance. Fluctuation can be detected, but tension is not greatly altered, and pressure is not more painful than before, perhaps even less so. At times the capsule seems no thicker than before, but in certain cases a large amount of thickening can be made out.

According to the nature of the bone lesion is the swelling; usually a more or less hard local elevation caused by periosteal thickening is felt. But when the primary lesion is near the surface and has lead to a suppurative periostitis, we may have a fluctuating swelling marking well its position; a (cold) abscess thus resulting will most always be very tender to pressure.

Another occasional symptom of the disease under consideration is the repeated formation of abscesses, which sometimes break spontaneously and heal, sometimes leave fistulous openings. Surely the picture of a tumor albus with one or several fistulæ is a familiar one to all. No attempt is made here to deny that abscesses may and do result from well-defined synovial inflammation, but they are *very* rare.

Finally, I will only here mention those muscular contractions by which the joint-ends are not only firmly pressed together, but kept in position most favorable for anchylosis, and by which great deformity and subluxation are produced.

When we come to discuss the causes of osteal inflammation, so often tuberculous, we have, first of all, to note this fact, that probably nine out of ten of them occur in patients of a tubercular (scrofulous) diathesis.[1] Just as we would give a more guarded prognosis were a scrofulous individual to have a chronic cough, and would redouble our efforts to conduct, in his case, a pneumonia or a pleurisy to a successful resolution, just so should we feel doubly anxious in case of injury or inflammation to the bones of similar individuals.

Undoubtedly in the list of causes trauma plays the most important *rôle*, either as a direct injury or as a disturbance to the nutritive supply from the immediately enveloping soft parts. A sprain or a dislocation may in this way be ample cause. Any disturbance, too, of the insertion of the capsule is a frequent cause of trouble.

Next to trauma, perhaps, stands syphilis, of which we have in this place little to say. And as further causes, if we may so denote them, are pregnancy and the puerperal state, and the condition, often one of marasmus, following the continued fevers and exanthemata. For instance, I have seen acute, and almost fatal, osteomyelitis of several long bones follow exposure during the menstrual epoch; another almost as severe case was a sequel of typhoid fever; and I have had to resect a knee-joint for a typical tuberculous trouble the first symptoms of which were presented during the fifth month of a first pregnancy, which got worse in spite of all treatment, so that the propriety of inducing premature labor was even seriously discussed in consultation, which improved as soon as labor terminated, but relapsed as soon as the illegitimate child was permanently removed from the breast, the whole case being similar to those which Barwell has described. But in each of these cases there was a well-marked diathesis and a deplorable history of family phthisical taint.

It is very evident, of course, that I am basing my pathology of the complaints under consideration on the tubercular basis. It is amazing to me that when continental authorities generally accept this idea so firmly, and not only base upon it their theories but their successful therapeutics, it finds such tardy recognition in the standard English and American text-books. What American text-book speaks of it in any but the most non-committal way? Take, for example, Agnew's *Surgery*, the latest representative American work; the author devotes a section to "Strumous Inflammation of Articular Extremities of Long Bones," in which he describes the ordinary naked-eye appearances of a fungous joint, divides the symptoms into three stages, and after saying a few words about the prognosis goes on at once to the treatment. Never a word about tuberculosis of bone as such. Nor elsewhere in the work can I find any information on the subject calculated to satisfy a searcher after knowledge. What author of a work in our tongue has the frankness to state that most all of our cases of hip-joint disease, for example, are due to that which really causes them—*i. e.*, tuberculosis of bone.

The latest representative English work is, of course, Holmes's *System* (London, 1883). This is more satis-

[1] *Vide* paper by Gibney, N. Y. Med. Journ., July, 1877, p. 6.

factory, provided only that one finds the right places, the article by Shaw and Barker being most so. And yet in this same work we find tbe editor himself saying (vol. ii. p. 304, note) "my opinion is that many of the deposits which are usually regarded as tubercles are masses of inspissated pus mingled with other inflammatory products, and that, rare as tubercle in bone is generally said to be, it is in reality still rarer." He then quotes Macnamara as holding more to the views already expressed in this paper, and adds: "Some of the German pathologists appear to regard every inflammatory production in which 'giant cells' and a 'reticulum' can be found as tuberculous, and then go on to assume for this tubercular product an auto-infecting property. All this, however, appears to me to rest on the slenderest basis of fact."

For our own part, while we call in question the statements of such an authority as Mr. Holmes with extreme diffidence, it is yet impossible to disbelieve the evidences of one's senses, which teach that tuberculous products do possess the extremely auto-infectious properties recognized by the continental authorities. As far as the writer's opportunities for observation have extended, it has seemed that the so-called strumous lesions of bone as well as of other parts were both more common and more carefully studied on the Continent than in Great Britain. A review of the literature of the subject leads one, also, to the same conclusion.

If, moreover, the presence of the *bacilli tuberculosis* counts for anything, it is proper here to state that the writer, like numerous observers abroad, is usually able to find them in the *débris* or pus from various bone and psoas abscesses, fungous joints, fistules, sinuses, etc., which he has thus learned to regard, and always to speak of as "tuberculous." And if failure to find the bacilli results in a certain percentage of efforts, in such broken-down material, we must not forget that it *is* broken-down, and often quite old and changed before the surgeon liberates it; which being the case, failure must necessarily at times result.

And here, even at the risk of being tedious, I think it well worth while to speak of the manner in which the specific microörganisms of tuberculosis play the part now assigned them as specific irritants. And in so doing, rather than use words of my own, I prefer to draw from the article by Shaw, and revised by Barker, above alluded to.[1] If this explanation is true for caries of the spine, it holds equally good for the other bones or parts of the body. I quote:

"The exponents of this view regard scrofula as a definite septic disease, characterized by proneness to low inflammation of the growing tissues of the body, the result of irritants introduced from without, and circulating in the blood. . . . These organisms taken up by the lymph radicles in the first place, are for the most part strained off, as it were, in the nearest lymphatic glands. It is by their aggregation and multiplication here that those cheesy masses so often found in glands—*e. g.*, of the neck, are supposed to be formed (Billroth). These caseous masses then are no longer regarded by pathologists holding this view as products of inflammation with secondary fatty degeneration, as first described by Virchow, but simply as colonies of microbia. They may, and usually do, eventually produce an inflammatory condition around them, but the material of which they are composed differs chemically and microscopically from the products of inflammation. Many of the microbia, however, are supposed to escape the straining action of the glands and thus gain admission to the general circulation. Arriving thus with the blood in the capillaries of the growing tissues, they not only interfere by blockage with the vitality of the latter, but act as direct irritants, producing either chronic congestion or (if agglutinated in large numbers) actual so-called cheesy deposits. These may then induce inflammation around them and themselves soften. . . . This aggregation of micrococci is held to be favored in bone by the arrangement of its vessels in wide lacunæ; hence the frequency of strumous disease in bone. . . . Particles of the cheesy deposit may be thrown off into the circulation, and be carried into some of the capillaries at a distance. Here they give rise to irritation and exudation of white blood-corpuscles, which form around them soft miliary granulations to which the name '*tubercle*' is given."

This explanation is not quite so complete as it should be made, but I give it because it is so refreshing to find it incorporated into any *text-book* in our language.

To this I would add that Weigert, perhaps more than anyone else, has helped to give explicitness to this fact of capillary embolism of tuberculous material. More than this, it is the only rational explanation which can be given of many cases of idiopathic caries of bone.

But I have said enough to outline and emphasize the more recent and soundest views concerning tuberculosis of bone and its frequency, and to serve as a basis upon which to construct, if possible, a rational therapeusis.[1] And first I must insist that tuberculosis when still a local disease is amenable to treatment, and can be—nay, frequently *is*—cured. We even know a pseudo-recovery from phthisis pulmonum. It is so difficult to cure partly because of the dissemination of the specific irritant, partly because of its frequent inaccessibility. But we know that superficial tubercular lesions accessible to the knife or the sharp spoon are very frequently cured; when failure results the effort is to blame. Furthermore, we know that many tubercular foci in the bones can be made accessible to the surgeon and then cured by the removal of all the local disease. We know also that Nature often effects a cure, sometimes by a reactionary inflammation, which leads to the death of the germs and absorption of morbid tissues, and sometimes by, so to speak, organizing a sanitary cordon around the tubercular focus—*i. e.*, encapsulating it thoroughly. We must then study in what way we can either bring these foci of disease under the surgeon's hand, or else stimulate and compel Nature to assume a belligerent attitude against her unseen enemies.

And here we gather instruction from studying

[1] Holmes's System, 1883, vol. ii. p. 405.

[1] So far as I know, Prof. H. H. Smith, of Philadelphia, was among the first in *this* country to give prominent public expression to sound pathological views concerning tuberculosis of bone. *Vide* his address on Surgery and Anatomy, Transactions Amer. Med. Assoc., 1878.

what takes place under other circumstances. If I apprehend the general principles of surgical therapeutics aright, the surgeon never achieves so rapid and radical a cure of a chronic inflammation or its results as when he more or less completely replaces it by an acute one. Compare the radical treatment of hydrocele, which is certainly a chronic condition; whether the sac be emptied, or injected with carbolic acid, or be laid open by the bistoury, the result is the same—an acute inflammatory condition supersedes the chronic one, and recovery by obliteration of the sac follows. So in opening a joint for chronic hydrarthrosis, so in drilling or wiring bone for ununited fracture; so, too, in numerous other affections.

Inasmuch, however, as the balance of this paper is to be devoted to the discussion of a single therapeutic measure let me say here that I am in the fullest accord with, in the first place, the general principles of treatment by insuring physiological rest, constitutional remedies, etc., and in the second place with the plan of radical and early treatment of foci of softening, when recognized, by the knife, the curette, or the hammer and chisel; but since we can now often detect these forms of ostitis before they have caused such disorganization, we need especially to find some measure which shall lead, if possible, to resorption of those products of inflammation already present; and this measure I think we have found in that which for some time has been known abroad as *Ignipuncture*.

Ignipuncture simply means an application to the interior of the bone substance of the actual cautery in some form. It is unnecessary to stop here to describe how acute inflammation for a certain distance around must follow the application of the heated metal to any spot; the slightest experience with its use demonstrates that. On this principle is based the treatment by ignipuncture, and the success following it justifies its use.

It may be suggested that anything else which serves to set up a reactive and acute ostitis would be sufficient to cure a chronic form of the same, and this certainly is the case. Kocher, for instance, had a typical case of chronic ostitis of the head of the humerus which he treated by making an incision down on to the greater tuberosity, drilling the bone, and driving in an ivory peg. Examination six months after showed a good and actively movable arm, a joint almost perfect in its functions, and only a little fluctuating spot at the site of the operation. This was incised and the little ivory plug found almost in its integrity; the peg was removed, the incision readily healed, and perfect recovery followed.[1] With a view to setting up speedy reactive processes, Kocher and others have also drilled holes in diseased bone and filled them with strong tincture of iodine, and with good results.

But long before these observations Percival Pott had shown the value of deep-seated counter-irritation. He placed particular stress on the formation of issues extending deeply, and well knew their value in that form of caries of the vertebræ called by his name.[2] Much in the same direction was the much more recent effective, but clumsy effort of Fitzpatrick, who, in a case of tubercular caries of the hip-joint with great atrophy, made a *deep* issue with the caustic potassa fusa cum calce. By thus perforating the bone shell the softened tubercular *débris* was evacuated, and in seven weeks the contour of the limb was restored and the patient could walk.[1]

But these methods are all more severe than that now to be described. The actual cautery has been known from ancient times, and its use during the long centuries past has been at times quite wise, and at times quite otherwise.

Richet was among the first to make the cautery actually penetrate to the bone-marrow. His observations, which were never published in full, are best known to us through a brochure pertaining to the subject published by Juillard in 1874.[2] Juillard himself strongly recommends it, and devised a special galvano-cautery point for the purpose. Kocher, to whose casuistic I owe my first knowledge of the subject (*l. c.*), began its use independently of Richet's work, in 1872, perhaps even preceding him, and devised his own forms of cautery irons. Lücke began with the thermo-cautery, and this is the instrument now in use, so far as I know, wherever ignipuncture is practised.

In general terms we may hold that ignipuncture is indicated in all cases of chronic ostitis where fluctuation and sinuses or other indications of points of softening and breaking down do not call for the curette or chisel; and in many cases even after removal of products of softening the cautery can still be used to advantage to stimulate surrounding bone into a normal activity. Its application may be *intraosteal* or *intracapsular*.[3]

If the former, the glowing platinum is either plunged through the skin and soft tissue right down to the bone and into its substance, or else an incision is made through a part or the whole of the soft parts since it is not so much disturbance of these latter which is primarily aimed at. Antiseptic precautions and dressings are of course indicated, and if the incision has been a large one it may be partially closed, but ample opportunity must be given for drainage so long as may be necessary. When combined with other operative measures a depot of softening may be cut down upon, its contents removed, the sharp spoon used as indicated, and from this bone cavity the cautery point may be made to perforate in different directions. The bone exposed to intensest heat is burnt into a crust; around this takes place an active inflammation which leads first to an osteo-porosis, and later to an osteo-sclerosis, which means virtual recovery. As I have already tried to show how often a primary bone lesion leads to a serious joint complication, it will be seen that the intraosteal ignipuncture may have a most important prophylactic effect as against the same; in fact, my own experience has taught me its value in this respect.

Intracapsular ignipuncture may be made either with or without previously opening the joint. If the joint

[1] Volkmann's Saml. klin. Vort., No. 102, p. 33.
[2] Chirurgical Works, vol. iii. p. 416 et seq.

[1] Biennial Retrospect, New Sydenham Soc., 1867–68, p. 261.
[2] Bulletin de la Société Méd. de la Suisse Romande, 1874.
[3] Deutsche Chirurgie, Lfg. 19, 1880, p. 231.

is supposed to be in a fungous condition it should certainly be opened and cleaned out, but if it seems to be merely a lesion in a bone-end lying so close to the joint surface that it can only be approached by going through the joint, then no hesitation need be felt in burning right through the capsule and its cavity into the bone; only being doubly careful about the antiseptic precautions. Lücke does not hesitate to lay the joint freely open. If the joint surface is healthy and only bone is diseased, joint reaction is unlikely to occur. This measure is also said to be serviceable in chronic rheumatic and other forms of synovitis, though I have had no personal experience with it in such cases.

In every case in which I have resorted to it I have administered an anæsthetic, though Kocher states that he seldom gives one. The actual cautery used in this way and with the avowed purpose of securing, not a "derivative" effect, whatever that may be, but a speedy and acute reactionary inflammation, is to be considered quite apart from the vigorous counter-irritation which so many, like Syme for instance, have sought to induce by the moxa or any external application of cautery or issue. It has been, as stated, in use in a few of the foreign clinics for ten or twelve years. If it has ever with us been employed as *ignipuncture proper* previous to the time when I began using it late in 1882, the accounts of its use have never met my eyes; so that I am, as far as I now know, the first in this country, if not to try it, at least to make a practice of and recommend it. So far as my own experience goes, the first result of its use is a speedy relief of the characteristic ostitic pains; tenderness on pressure disappears later.

For the purpose of showing what the treatment is capable of accomplishing, I put on record the following cases selected from a not large but steadily increasing number of more or less similar ones recorded in my case-books.

CASE I. was a most typical case of ostitis of the internal condyle. J. B, æt. twenty-one. Scrofulous diathesis. History of trouble dates back three months. Had been in a hospital a part of this time and under treatment by iced applications, rest, etc. He was admitted into the Michael Reese Hospital, Chicago, when I found on his admission marked enlargement of the internal condyle of the femur to such an extent as to deflect the leg notably to the outside of its proper angle with the thigh. It was extremely tender, gave him much pain, especially at night, and rendered the leg useless. Beyond a moderate effusion into the joint there was little or no joint affection proper. On February 23, 1883, I made a single ignipuncture, directing the cautery point into the centre of the area of tenderness, and burning in about 2 cm. ($\frac{4}{5}$ inch) below the bone surface. Iodoform dressings. All pain at once subsided. By April 9th the enlargement had disappeared, the leg resumed its normal position, and he could walk without pain. A week later he was discharged cured. During the months following I often met him on the street, and he always assured me of his perfect health.

CASE II.—J. A., æt. fifteen. Scrofulous diathesis. Early in February, 1883, the patient took violent exercise while skating, was exposed in severe weather, and came home lame and tired out. This was the history I got when, a month later I took charge of his case and diagnosticated an acute osteomyelitis of both femurs, particularly of the left, with great sympathetic disturbance of both hip-joints. Indeed, so severe was the joint complication that the surgeon previously in attendance had lost sight of the primary cause and considered his case one simply of severe hip-joint disease. For a few weeks I kept him on supporting treatment, insured physiological rest by traction, employed counter-irritation—in a word, resorted to the routine treatment. All this time there was exquisite tenderness, of the left limb down nearly to the knee, of the right not so far, while suppuration had once or twice seemed imminent, and so widely were the bones affected that much of the bony pelvis was in the same condition. His sufferings were severe and called for anodynes.

Gaining at last the parents' consent, I had him removed to the Reese Hospital, where on May 3d I made ignipuncture by first incising down to the left trochanter major, and then burning into the upper end of the shaft of the femur and in the direction of the axis of its neck, going in fully 3 cm. ($1\frac{1}{5}$ inch). At the time of operating the bone could be felt to be fully a half thicker than its normal proportions, and in spite of the atrophy of the soft parts, which was considerable, the left thigh measured, near the pelvis, fully 2 cm. ($\frac{4}{5}$ inch) more in circumference than the other, while the bone of the other side was also thicker than it should have been. By May 5th he was free from pain except on the other side. By the 18th both thighs measured the same in circumference and he was quite comfortable. By the 28th the ostitis of the pelvic bones seemed to have nearly subsided save just at the pubis; he also complained of a painful and tender spot on the inner side of the left femur above the knee. So I again anæsthetized him and ignipunctured at the pubis, at the site of the first operation and just above the knee. Pain was again relieved. In three weeks he was up in a rolling chair; by the last of July he was around on crutches and could bear nearly his whole weight on his left limb; his joints were more or less stiff, but by passive motion he was daily regaining their flexibility.

CASE III.—Lizzie F., æt. twenty-six. Patient has a marked family history of tubercular trouble; she has also had syphilis. In the spring of 1882 she had sacro-iliac disease on one side, for which she was kept in bed four months, with enough traction on the limb to enforce rest. By autumn she was in her usual health, except that she was troubled, as she had been for years, with leucorrhœa and with occasional muco-purulent discharges from the rectum; the rectal difficulty I considered to be an ulceration high up. For this last she had been under intermittent treatment, but her irregular and dissolute life prevented any systematic attempt to cure it. January, 1883, after a prolonged dissipation she had a relapse of the old sacro-illiac disease, and the trouble extended so as to involve more of the pelvis and the upper end of

the femur. At that time I diagnosticated tuberculous disease of the ilium, tuberosity of the ischium and femur. In spite of rest, anti-specific and supporting treatment and counter-irritation, her malady continued to aggravate, so that I finally suggested ignipuncture. In this advice my friend Dr. Ernst Schmidt, of Chicago, coincided; he having been cognizant of the results gained in Cases I. and II. above.

Therefore April 26, 1883, I chloroformed the patient, and after incising down to the bone I ignipunctured the trochanter major deeply and the posterior superior spine of the ilium less so. Iodoform dressings. This case, to our surprise, did badly. Within twenty-four hours she was irritable and irrational; on the third day she had lost all self-control, though her temperature was normal and the wounds in excellent condition. On the fourth day she was comatose, and from this coma she never aroused. Her temperature rose steadily, her respirations became more frequent until they were forty to the minute, with a pulse of one hundred and sixty, and she died on the eighth day with a temperature of 41.2° C. (106⅛° F.), respirations sixty-two, and pulse one hundred and sixty-five. Here was probably an acute general miliary tuberculosis with strongly marked meningeal implication. To my great regret, no autopsy was allowed. Whether tubercles were already deposited in the meninges, and the anæsthesia and operation together simply provoked a general eruption of tubercle already imminent, or whether my cautery point opened into a fresh mass of infectious granulations as well as into absorbents ready to sweep these fresh products into the general circulation, I cannot say. As between acute miliary infection as ordinarily known, or a fresh tubercle embolism corresponding to fat embolism, I could not positively decide. Either one or the other, perhaps both, must have taken place. Her family history, evident diathesis, specific disease, and dissolute life, were causes amply sufficient to make tenable either hypothesis. At all events, though this case was not a success, it did not shake my confidence in ignipuncture as a remedy and a prophylactic; it only made me wish I had used it much earlier.

CASE IV.—Fanny H., æt. twenty-four. Tubercular diathesis. January, 1883, while menstruating for the first time in three months, she "caught cold," and the following day had a rigor followed by high fever and excruciating pain in her lower limbs. She gave in fact a typical history of acute osteomyelitis such as I have referred to briefly above, and which, as so often occurs, was not properly diagnosticated and treated. She was at that time in Minnesota and was treated for three months by her attendants for "rheumatism" before bone trouble was discovered. After she had been sick two months an abscess of the right thigh was opened, and has since continually discharged; another abscess on the thigh was opened, and then closed spontaneously. After some five months' illness she was brought to Chicago and placed in a private room at the Reese Hospital where, at request of Dr. Mannheimer, I first saw her.

June 1, 1883. *Status præsens:* General condition fair, except that she is very weak; bowels irregular; no menses since the time when she caught cold. She is helplessly confined in bed. Both femora enlarged throughout their entire length to the thickness of the middle of my forearm. Abscess on the outer side of right thigh discharging all the time. Inner condyle of right femur so enlarged as to throw the leg far out of its proper line, and, with the knees together, keep the feet at least twelve inches apart. Right knee quite stiff; very limited motion in left knee and both hips. Tissues all around the thighs and knees indurated and boggy. Pain continuous, but variable; anodynes in frequent requisition. In this case also I had the advantage of counsel with Drs. Schmidt and Mannheimer.

On June 9th I anæsthetized her and operated under the spray as follows: I made an incision on the outer aspect of the right thigh, some 25 cm. (10 inches) long, down to the bone, the periosteum being in some portions 2 cm. (¾ inch) thick. There being considerable pus between the periosteum and bone, I made a counter-opening at the outer condyle, very near the joint cavity. The bone seemed so thoroughly disorganized and diseased that disarticulation at the hip appeared to be indicated, and would have been performed had the necessary consent been gained. A small incision was also made near the outer condyle of the left femur, where the same condition of affairs existed, only in milder degree. At this point I made a deep and large ignipuncture with the thermo-cautery.

Patient made an unexpectedly good recovery; pain vanished completely from the ignipunctured limb. In less than two months all discharge had ceased, and she was up in an invalid rolling chair and regaining considerable motion at the hips; the knees, however, were quite stiff. The femora were reduced to nearly their normal proportions. In this case an operation for the relief of anchylosis was made subsequently, and since leaving Chicago I have learned that she continued to improve so as to get around comfortably with a cane.

In this case I only ignipunctured one side; I should have done as much for the other, but at the time of operating the prospect of life of that limb, and even of the patient, seemed too hopeless to make it worth while. This case taught me an excellent lesson as to the viability of diseased bone.

CASE V.—J. H., of Pennsylvania, æt. forty. In 1875 patient had an ischio-rectal abscess which broke spontaneously, and established a fistula in ano that still persists. I mention this here to show the concurrence of two tuberculous lesions, apparently local and independent. In November, 1879, he "turned the left ankle under him," doing such damage that his medical attendant told him he had broken some bone; which one he does not know. Not long after this the lower end of the tibia began to enlarge; a sinus opened, discharged a year, and then closed. By May, 1880, he was able to move about with a cane, but in May, 1883, it became worse, so that he could scarcely bear his weight on it for more than an hour.

December 1, 1883, he was admitted under my

care in the Buffalo General Hospital. *Status præsens:* A large, well-nourished frame; general condition fair. Fistula in ano present. Find also the lower end of the left tibia much enlarged and club-shaped; notable atrophy of soft parts above and below; motion at ankle barely possible; extreme tenderness about internal malleolus, and on pressing the foot against the tibia. Complains of pain, worse at night. Diagnosticated ostitis tuberculosa.

December 12th, in my clinic, I anæsthetized him, and making an incision down to the periosteum at the internal malleolus, I first explored with a bone drill to see if I might find any pus. Finding none, I ignipunctured in different directions with the thermo-cautery point, going in fully 2 cm. ($\frac{4}{5}$ inch). Naphthalin dressing. At the same time I operated on the anal fistula, and scraped out a quantity of detritus such as I have already spoken of as tuberculous.

Within ten days the bony enlargement was perceptibly smaller, and most of the tenderness disappeared. Pain was relieved at once. The joint also could be moved almost to its full extent. On January 23, 1884, there being still a point of considerable tenderness, I repeated the ignipuncture. By March 1st the bone had resumed its natural size and shape, as compared with the other side, and he could bear nearly his whole weight on the foot. He made an excellent recovery.

CASE VI.—Ethel S., æt. five. Deaf-mute. Tuberculous diathesis and family history. Patient brought to me from Canada. When sixteen months old she spontaneously developed a disease of the left knee, and for some months would not use it. After a while it straightened out from its previously flexed position, and she began to use it again. December 15, 1883. *Status præsens:* Typical tumor albus, with contracture to a right angle; subluxation backwards of head of tibia; clubbing of lower end of femur; atrophy of soft parts, and moderately firm anchylosis. In my clinic on that date I made tenotomy of hamstring muscles and lateral ligaments, and then applied traction with hot fomentations about the knee. Within a week the limb was very nearly straight. At this time the circumference of the knee-joint was four centimetres greater than that of the other knee, in spite of great atrophy of soft parts.

January 9, 1884, there being a point of great tenderness over the internal condyle, as nearly as could be made out from the actions of the child, I ignipunctured through the capsule. The child went home February 16th with a joint movable through an arc of 100 degrees, only *1 cm.* ($\frac{4}{10}$ inch) of difference in circumference as between the two knees; no signs of special tenderness could be elicited. A posterior straight splint, with daily passive motion, and a high shoe sole on the other foot with the use of crutches, were advised. August 1, the limb is in a most satisfactory condition.

I will not now add to the number of these cases, for I think they serve as well as would twice their number to demonstrate what ignipuncture may be expected to effect. I have not yet seen fit to resort to it in incipient spinal caries, in which cases I, at the same time, think it would be of marked benefit. The deep position of the bones affected, and the somewhat extensive operation necessary to expose them for this treatment, have so far deterred me from attempting it; but the more I extend my experience with it the more I feel that the experiment should be made. Nor am I aware that anyone else has seen fit thus to use it. But for all accessible bone disease of the kind I have described I cannot but feel that we have here a procedure which is both curative of the present disease and prophylactic against extension; and that its extension may be the cause of frightful local ravages, not to say of acute general miliary tuberculosis, a study both of cases and of recent literature will fully convince.

305 DELAWARE AVENUE,
BUFFALO, N. Y.

## URTICARIA AS A CAUSE OF MISCARRIAGE.

BY S. J. RADCLIFFE, AM., MD.,
OF WASHINGTON, D. C.

OF all the reflex causes of premature birth, or miscarriage, I have seen none attributed to urticaria. Excessive irritation of the nervous arcs—mammary, rectal, or uterine—or of the periphery, or of any of the internal organs, especially excessive gastric or intestinal irritation, as from dyspepsia, diarrhœa, dysentery, or intestinal worms, are spoken of as probable causes of abortion or premature birth; but general febrile diseases, smallpox, and other exanthemata, as scarlatina, and relapsing fever even, seem to have no particular or immediate effect in that direction, even should the fœtus or child in utero be attacked simultaneously with, or consecutively to, the mother, which is known to be the case—the child being born with pustules of variola on some portions of the body, or shows signs of other eruptive fevers, as scarlatina. If miscarriage or abortion should occur from such causes, as they do sometimes, a fatal issue is apt to be the result. Dr. Charles A. Leale reported a very interesting case, in a paper read before the New York County Medical Association, April 21, 1884 (THE MEDICAL NEWS, May 31, 1884), of scarlet fever in a child at birth, the mother being at the end of the ninth month of pregnancy, labor being induced when she was in the early part of the eruptive stage of the fever. The child was delivered with the forceps, and was also in the eruptive period, simultaneously with the mother. This only shows, however, that scarlet fever does occur at such periods, and may occur at any other, but not that it produced premature delivery, though it possibly hurried delivery in this case.

The ordinary accompaniments of pregnancy have usually no deleterious effect on its progress. Leishman says: "In so far as the familiar affections which so frequently attend early pregnancy are concerned—such as sickness, faintness, salivation, and the like—and which, when extreme, are considered among the diseases of pregnancy, it has always been observed that these are very rarely the cause of abortion. The most common of all—sickness—is, even in the worst cases, little liable to be followed by premature expulsion. 'It is,' as Dewees says, 'a re-

mark as familiar as it is well grounded, that *very sick women rarely miscarry*.'" These affections continue frequently up to the end, and only cease with a natural and easy delivery, or the child may have even gone through an eruptive disease, the mother being a mere conductor of the contagious principle, without miscarriage. "As an illustration of which, in the case of smallpox," Leishman says, "Mauriceau tells us that shortly before he was born, his mother had the misfortune to lose the eldest of her three sons by this disease, and that, in spite of her condition, as women will do, she tended him with constant and tender care. Mauriceau was born the day after his brother's death, and, although his mother neither then nor subsequently presented the slightest symptoms of the disease, he had on his body at his birth five or six undoubted variolous pustules."

The local causes of abortion and premature birth are various. Hart and Barbour (*Manual of Gynecology*) say: "The cause of abortion may be (1) in the fœtus, or (2) in the mother. On the part of the *fœtus*, disease of the chorion and hemorrhage into the fœtal part of the placenta produce death of the fœtus and consequent abortion; these conditions are most frequently due to syphilis. On the part of the *mother*, endometritis and metritis are the most important causes. General debility and fevers (typhus and scarlet) also produce abortion." And also "it is evident that a severe blow or fall might lead to hemorrhage and separation of the membranes," and consequently miscarriage.

Leishman says: "Many of the causes which have been enumerated as inducing abortion may also operate similarly at this more advanced period of pregnancy, but there are undoubtedly other special causes which may also be mentioned. The most important of these latter is over-distention of the womb, from whatever cause this may arise. Plural pregnancy, dropsy of the amnion, and hydrorrhœa, are all causes of this nature; and the immediate result of their operation is that the uterus attains, at a period much earlier than is usual or normal, that degree of distention which is characteristic of completed gestation."

A little review of the definition, etiology, and pathology of urticaria may give some insight into the reason why it might play so important a part, in causing the premature expulsion of the contents of the womb, an action which can only be looked upon, probably, as entirely reflex in its nature.

Plumbe and Hillan place urticaria among the exanthemata. McCall Anderson places it among the inflammations, with erythema, eczema dermatitis, and erysipelas. Dr. George Henry Fox also classifies it under the head of the inflammatory affections with eczema dermatitis, etc., and so do most all dermatologists.

Plumbe says: "Urticaria has constitutional causes, and is allied to prurigo, and consists chiefly of that species of determination to the skin, produced by sympathy with the stomach, or by local irritation." Wilson Fox says "it complicates acute catarrh of the stomach, and is often caused by shell-fish, mushrooms, cucumbers, etc., or by substances against which the patient has a special idiosyncrasy."

Niemeyer says: Urticaria has been classified according to the different exciting agents which produce it: "1, from external irritation; 2, from ingesta; 3, urticaria febrilis; 4, chronic urticaria; 5, there is a form of urticaria mentioned by Hebra which is evidently dependent upon uterine irritation, and which appears in some women during pregnancy, in others during menstruation, while in others again it accompanies diseases of the womb, or follows the introduction of pessaries."

The pathological conditions entering into this form of disease are not easily settled. Like many other affections, it has not been decided whether it is a purely local affair as a dermatitis *per se*, or a general febrile or blood disease, as erysipelas, etc., the external appearances being only symptoms of a deeper trouble, or a simple neurosis. Authorities differ as to all of these views. The generally accepted opinion is that it is a local irritation or dermoid inflammation, according to Niemeyer, in which a serous infiltration of the papilla of the skin, and probably, too, a swelling and infiltration of the cells of the rete Malpighii cause the formation of circumscribed flattened elevations, whose width is greater than their height, and which are called wheals, dependent partly upon external causes, but principally upon altered fluids or retained excreta, absorbed into the circulation, from unwholesome ingesta; such fluids or poisons being noxious to certain cell elements, cause the changes which take place in the skin, and the great discomfort so characteristic of the disease.

In this view of the pathology of urticaria, it is a fair question to ask whether the unwholesome ingesta were the prime factor, and the dermatitis the secondary effect, and, whether the deleterious matter operated through the general circulation or through the nerve-centres.

Handfield Jones says: "Urticaria, by its fugitive character, by its manifold and various causes, by its nocturnal invasion, by the dysæsthesia attending it, and by the nature of its phenomena, fully asserts its title to be regarded as a neurosis. . . . It is, I think, probable that the dysæsthesia and the cutaneous contraction are co-results of the same nerve disorder, and that the latter is not merely the reflex of the former. The spasm is certainly not dependent upon hyperæmia, as in urticaria evanida it occurs without any. The diffuse inflammatory redness of the skin, which is marked in some instances, and attended even with swelling, must be considered as an indication of vaso-motor nerve paresis, and we thus get in this curious malady three different pathological changes, resulting from the operation of the same cause, viz., spasm of contractile tissue in certain parts, paralysis in others, and a state of hyper- and dysæsthesia of sensory nerves." "Like most neuroses, urticaria may be produced by remote irritation, which is in many cases seated in the intestines, but may be elsewhere, as in the female sexual organs." Charcot mentions particularly cutaneous affections accompanying nerve disorders, and says: "In the case of a woman at present under treatment at La Salpêtrière (for locomotor ataxia), enormous patches of urticaria are produced at every paroxysm on the

parts where the keenest pains are felt. (*Lectures on Nervous Diseases;* Philadelphia, 1879.)

References might be multiplied to show that this is the correct aspect of the subject, and why it might be a prime element in the causation of miscarriage. Viewed as a neurosis, very much of the effects of urticaria might be accounted for, especially when we regard the intense systemic irritation it produces, and the manifold secondary complications it is liable to engender. It is in this point of view that I have regarded the subject, and in which I present it. The following case I report as bearing somewhat upon the matter, and hope it will not be without interest:

Mrs. ———, aged twenty-six, native of Virginia, strong, healthy woman, mother of one child two and a half years old, pregnant for the third time, in the eighth month of utero-gestation; miscarried October, 1881, at third month, supposed from abdominal pressure, from carrying her child on one arm and a heavily filled market basket on the other. Had much hemorrhage, and was very much reduced. Was attacked the morning of 22d July, 1882, with severe lancinating pains about the umbilicus, attended by much nausea, and incessant vomiting of large quantities of clear greenish fluid, which came up without effort, as if by mere contraction of the stomach. Her body, from head to foot, was thickly covered over with the eruption of urticaria, particularly over the abdomen and face, the face being intensely red and puffed, and with it distracting burning and itching. Her pulse and temperature were considerably increased, bowels slightly constipated, and tongue lightly furred. She did not remember to have eaten anything to disagree with her; had rather been abstemious; but, remembering her miscarriage only nine months before, had been greatly concerned for some time about her condition, much more so than usual, for fear something should happen to her for evil, either before or during her confinement. This thought had kept her in a nervous state, and this sickness coming on her suddenly, almost without premonition, still further alarmed her. I prescribed rest and an alkaline and opiate mixture, and afterwards a saline aperient when the pains had subsided. The pain and vomiting ceased after a few doses of the medicine. The aperient gave her two light operations in the morning.

*23d.*—11 A. M. she was free from pain and sickness of stomach, and the urticaria had partially faded, but was yet visible over most of the body, and still caused much distress. She felt better, and desired to get up. She said she had not felt the fœtus move since the 22d, the day she was taken sick.

*24th.*—At 4 A. M. was called in haste, and on my arrival found she had miscarried of a well-formed, full-sized, stillborn female child, of the eighth month. The placenta was detached, and was easily removed. The urticaria at once began to disappear, and in three or four days was entirely gone, and she made a good recovery.

*July 18, 1883.*—She was delivered of a full-sized male child at term, with no return of the urticaria.

1211 F STREET, N. W.

## REPORT OF A REMARKABLE CASE OF COUGH.*

BY ALEXANDER W. MACCOY, M.D.,
MEMBER OF THE PHILADELPHIA LARYNGOLOGICAL SOCIETY.

THE following is a report of a case under my care for some time, sent to me by a prominent practitioner of this city, who desired me to take charge of the case, and determine if anything could be done for her relief.

Mrs. S., æt. 40, resident of Philadelphia, married twice, the mother of one healthy child, was first seen in December, 1882. At this time she was suffering from an almost continuous, exhausting, irritative cough, accompanied by violent fits of gagging which had defied all treatment, and which had continued for several years. The patient was very thin of flesh, and her face much careworn. She stated that her attacks of cough often lasted for hours, and were frequently accompanied by the fits of gagging, which came on after the cough had continued for a short time. Sometimes after ascending the stairs, gagging would follow and soon render her helpless. Her debility was so marked after one of these paroxysms that she frequently had to go to bed, and was compelled to remain there for some hours. Between the attacks of coughing and gagging she was rendered most miserable, and was completely debarred from social engagements.

Examination showed no pulmonary disease. Inspection of fauces revealed marked cicatrices involving most of the posterior pharyngeal wall, extending well down the throat. Laryngoscopic examination at once made manifest the cause of her attacks. On a line with the superior margin of the arytenoidal portion of the larynx, on the posterior wall of the pharynx, was a horizontal cicatricial band extending well across the pharynx about one-eighth of an inch in diameter, the ends of which spread out in a fan-shaped manner, the fibres being lost in the tissues on each side. This band was so placed that the free edge of the epiglottis was touched by it while rising and falling, and readily explained the cause of the cough. The gagging was brought about by interference with the free action of the vertical and circular muscular fibres of the pharynx, as well as by impingement of the free edge of the epiglottis.

The *specific* action (undoubtedly the cause of the destructive change) had long since ceased. While there was no direct history of syphilis, there was a history of a severe attack of ulcerative disease many years before, which she states her physician called diphtheria. No lesions of syphilis excepting those found in the throat were visible.

The treatment consisted in dividing the cicatricial band with the galvano-cautery knife *vertically*, and dilatation. The first operation was not attended by perfect success, owing to the incision being too near the median line. A few weeks after the first operation a second incision was made on the left side much longer and deeper than the first one. This effort was eminently successful. For six months there was absolutely no return of cough and gagging. Quite recently there has been some return of her

attacks from neglect to keep up the dilatation. Another operation of multiple incisions was made a few months ago, which again completely relieved her. With occasional dilatation it is probable that the result will be perfect, but without it contraction will certainly occur in time (as is so well known), and the result will not be so satisfactory as it now is.

The adaptability of the galvano-cautery knife for the relief of this condition has so impressed me that I am unable to see how the operation could have been performed so safely and so well by any other method.

1417 WALNUT STREET.

## MEDICAL PROGRESS.

PASTEUR'S EXPERIMENTS ON HYDROPHOBIA.—M. PASTEUR, in his address before the International Medical Congress, related the latest results of his experiments concerning (1) trephining; (2) injection into the blood; and (3) the bite of the dog. When he had discovered his method of inoculating dogs, and so made many dogs insusceptible of hydrophobia, he requested the French Government to appoint a competent committee to judge of his results. The request was granted by the Minister of Education, M. Fallières, who appointed MM. Béclard, Paul Bert, Bouley, Tisserane, Villemin, and Vulpian, as members of the Committee. This Committee has just sent its report to the Minister, of which the following are the most important points. M. Pasteur gave twenty-three inoculated dogs to the Committee. These were compared with nineteen non-inoculated dogs selected by the Committee. The Commission first observed that, in guinea-pigs, the onset of hydrophobia occurred five days after inoculation, and it was also ascertained that, in rabbits and dogs, the period of incubation was extended to twelve or fifteen days. The experiments, by the request of the Commission, commenced by inoculations made within the cranium. The matter for inoculation was taken from the pons Varolii of a dog who died in the infirmary at Alfort, from ordinary hydrophobia. A circular piece of bone, five or six millimetres in diameter, was removed with the trepan, and the inoculation was made with a syringe in which the extremity of the needles was bent almost to a right angle, so that the matter was inoculated immediately beneath the dura mater, and not into the cerebral substance. In this manner, two dogs who had been submitted to prophylactic inoculation, and two who had not, as well as two unprotected rabbits, were inoculated; subsequently, two protected and two unprotected dogs were allowed to be bitten by a dog suffering from hydrophobia; and after the death of this dog, six other dogs, three protected and three unprotected, were inoculated. On subsequent days, the experiments were repeated and varied. Altogether, forty-two dogs were used, of which twenty-three were protected by prophylactic inoculation, and nineteen were unprotected. Of the nineteen not protected, fourteen died of hydrophobia; that is to say, of animals bitten, three out of six died; of eight animals in which intravenous inoculation was performed, six died, and all five inoculated through an aperture made in the cranium with a trepan; of the twenty-three dogs protected by prophylactic inoculation, not one died of hydrophobia, one died with diarrhœa; but inoculation showed that there was no reason to suppose that the animal had hydrophobia. The work of the Commission is for the present arrested, but will be resumed; attention will be particularly directed to the methods of vaccination, and to the question whether the inoculation of an animal already bitten can prevent the subsequent development of the disease. M. Bouley, writing in the name of the Commission, testified that, so far as the investigation had gone, it had been found that M. Pasteur had advanced no statement which was not rigorously exact. He had established that, by inoculation with an attenuated virus, dogs could be rendered refractory to hydrophobia. It yet remained to be ascertained for how long this immunity persisted. The Commission now intends to vaccinate twenty dogs of their own accord, so as to ascertain results independently of M. Pasteur. M. Pasteur finished his address by stating that animals are proportionately less infected by bites from dogs than by inoculation. His experiments had only produced results with regard to animals, but he considered it most likely that, if the dog could thus be made insusceptible of hydrophobia, the source of this dreadful disease in man would be extirpated, and the question as to prophylaxis, both for dog and man, would be solved.—*British Medical Journal*, August 16, 1884.

INTESTINAL RESECTION AND SUTURE.—FIELD reports (*Arch. f. klin. Chir.*, Bd. xxx. S. 222) the case of a man, æt. 33 years, who came to the Clinic at Bonn with a strangulated hernia four days old. The hernia was gangrenous, and Field resected four inches on the concave side of the intestine, and four and a half inches on the convex side; and put in sixteen fine, and twelve deep sutures. A fine needle, and the finest sort of silk were used. Although it was necessary to reopen the wound, and though the patient had an attack of pneumonia during convalescence, he was well in six weeks after the operation.—*Centralbl. f. d. med. Wissensch.*, July 12, 1884.

REMOVAL OF GALL-STONE FROM THE ILEUM.—Dr. J. M. Browne, U. S. N., reports a case which occurred in the practice of DR. WM. E. TAYLOR, U. S. N. (retired). The patient was a woman, about forty-five (?) years of age, who had abdominal pain and nausea, no action from the bowels for two days, and enemata and laxatives had failed. Nothing wrong was found at any of the usual hernial outlets; the rectum was empty, and the uterus normal and in good position. There was but little tenderness, and no apparent swelling; excessive fat made an abdominal diagnosis difficult. Dr. Taylor was most impressed as to the serious nature of the case by the "shock" and increased frequency of the pulse, which he has always seen in gut-injuries, whether from wounds or strangulation. The vomiting, which had been bilious, became stercoraceous. Under the belief that there was an acute obstruction, an operation was performed. A band surrounding the ileum was encountered and divided, and, following the distended gut down, a hard, pear-shaped body was found firmly impacted in the ileum, at its lower portion, say, some twelve or eighteen inches from its lower end. This

body was situated with its small end pointing downwards, and fitted as tight as a cork, not even allowing wind to pass it. It could not be moved, nor could the fingers make any impression on it, by any *safe* pressure. A needle was introduced through the wall of the gut, but it was too hard to be broken. The intestine was opened by an incision one inch in length, and the gall-stone removed; the wound in the gut was sewed up and the abdominal wound carefully closed.

The patient died on the fifth day. At the autopsy the gall-bladder was found thickened and closely adherent to the duodenum, with an opening nearly an inch in diameter leading through into the bowel, the peritoneal cavity being shut off by the adhesions. The intestinal wound was so far healed as to prevent the escape of contents. There was but little more peritonitis than at the time of the operation. The wound in the abdomen had not taken on much repair. The stone was pear-shaped, nearly two inches long, and one inch in diameter. —*Proc. Naval Med. Society*, vol. ii. No. 1.

ALTERATIONS OF THE KIDNEYS FROM UTERINE FIBROIDS.—PROF. S. POZZI, at the close of an article on this subject, draws the following conclusions:

1. Compression of the bladder and ureters is a frequent complication of fibroid tumors of the uterus, even when they are of moderate size; and they may rapidly cause grave kidney lesions, such as hydronephrosis, cysts, sclerosis, and fatty degeneration.

2. When the compression acts directly on the bladder, it is easily recognized. When, however, the ureters are compressed, the trouble may not be recognized until kidney lesions have been produced, and variations in the urine from the normal (as albuminuria) detected.

3. Compression of the bladder or ureters should be of great weight in determining an operation (hysterectomy), and are alone sufficient to cause a hasty intervention on the part of the surgeon.

4. In case of hydronephrosis, the indication for operating is particularly pressing, in view of the danger threatening the kidney. The treatment of these complex cases may be rendered less grave by first performing hysterectomy, and, after the patient rallies from this, then attacking the cyst:

5. The prognosis of hysterectomy is considerably graver when an examination of the urine shows renal alterations; and should they be very advanced, as in confirmed Bright's disease, the operation is contraindicated; a moderate amount of albuminuria, however, is not a contraindication.—*Annales de Gynécol.*, July, 1884.

SWOLLEN AXIS-CYLINDERS IN THE CORD.—FR. SCHUTZE reports (*Neurologisches Centralbl.*, No. 9, 1884) the results of the examinations of the spinal cords from six cases of parenchymatous, and three of interstitial nephritis. In three cases he found the axis-cylinders swollen, especially in the dorsal portion and in the lower portion of the cervical enlargement, and for the most part in the periphery of the lateral columns (Seitenstränge). There was no meningitis in the doubtful cases. Œdema and dropsy seemed to play no part in the origin of the swelling, since it was found to an extraordinary degree in a case of leukæmia in which there was no œdema at all. It appears to be due to altered nutrition of the axis-cylinder, caused by general alterations in the quality of the blood.—*Centralbl. für klin. Med.*, July 26, 1884.

THE CONDITION OF THE AXIS-CYLINDERS IN MULTIPLE SCLEROSIS.—In a case of multiple sclerosis of the spinal cord (extensive, diffuse, irregular chronic myelitis) SCHULTZE found the pyramidal tracts of the cervical portion, together with the greater part of the anterior and lateral columns, altered, and also the whole posterior columnar region in the lower cervical portion. Still, there was not the slightest secondary degeneration of the lateral columns of the dorsal portion, corresponding to the posterior columns of the cervical portion of the cord. As is known, the absence of secondary ascending and descending degeneration in multiple sclerosis is the rule, and it is a question how this apparently anomalous condition is to be explained. Charcot has already shown that the axis-cylinders exist in a certain quantity in the central regions of the sclerosed masses; and Schultze proved this very satisfactorily by Freud's gold-chloride method. They were completely without nerve-pulp, and partly swollen. From this it appears that the absence of secondary degeneration requires an extensive alteration of the axis-cylinder, and is not due to complete loss of the pulp-sheath to a circumscribed extension upwards.—*Centralbl. f. klin. Chir.*, July 26, 1884.

THE ALEXANDER-ADAMS' OPERATION FOR DISPLACEMENT OF THE UTERUS.—Mr. Robert Miller reports two cases operated on at the Town's Hospital, Glasgow. The operation consists in making a simple skin incision over the external inguinal ring, gathering up the ends of the round ligaments and drawing them sufficiently out to restore the womb to its normal position. Finally, the ends of the ligaments are stitched to the edges of the wounds.

Both the cases operated upon were successful. DR. ADAMS, in commenting upon them, says that these cases show the immediate relief that may be obtained from this operation in cases of *prolapse*. There is, however, some risk of the operation becoming discredited from two causes. Thus it requires considerable experience to recognize, catch up, and manipulate properly the ends of the ligaments. The least rough handling may tear them, and too much poking within the wound by unskilful exploration is apt to produce a condition favorable to hernia, and favorable to the induction of suppurative action. Then in cases of old retroversions or flexions, in which the posterior portion of the fundus uteri has become more or less hypertrophied, the operation will only yield partial *immediate* relief, and it is through time alone that the altered circulation will affect the dense uterine tissue, and alter for the better the nutrition of the organ. That it does do so is shown in one case in which menstruation has been reëstablished after a long lapse of years.

It is better to cut off about one inch of the ligament, as the extremity usually sloughs. The manipulation required even in experienced hands is an obstacle to the chances of getting the wound to heal by first intention; but with more frequent opportunity I am becoming sure that this may be obtained in the majority of cases. The catgut used should be prepared to with-

stand the action of the tissues for ten days; and in addition to stitching the ligaments to the pillars of the ring, the sutures bringing the external wounds together should pass through the ligamentous tissue that projects from the ring.—*Glasgow Medical Journal*, August, 1884.

NEUTRAL SULPHATE OF ATROPINE IN ACUTE OTITIS OF CHILDREN.—Since Dr. Gentilhomme made known about two years ago the good results obtained by the administration of atropine for catarrhal inflammations of the nose, several confirmatory observations have been published. The action of atropine is undoubtedly favorable in the greater number of cases; in some cases it is so energetic, even in doses of gr. $\frac{1}{100}$, that considerable dryness of the pharynx is caused, and deglutition rendered so difficult that the patient cannot swallow solids. These effects are particularly intense in patients who have a commencing pharyngitis sicca.

DR. C. MIOT has prescribed the solution of atropine for a certain number of children who were often affected with intense rhinitis, and had, at the same time, an acute otitis on one side or the other. The atropine aborted the rhinitis and prevented the otitis. Miot has notes of over thirty cases in which this treatment was successful.—*Rev. de Laryngol, Otol., et de Rhinol.*, Aug. 1884.

CYSTOID DEGENERATION OF THE ARACHNOID.—PROF. LANGERHANS, in his *Inaugural Dissertation*, Berlin, 1884, describes four cases of cystic degeneration of the arachnoid, with marked anomalies of the brain, which were observed during the first half of the semester of 1883–84 in the Pathological Institute in Berlin. In the first case there were multiple defects of the cerebral hemispheres; in the second, there was a cyst as large as a hen's egg in the cerebellum; in the third, there was a cyst at the base of the left parietal lobule as large as a pigeon's egg; and in the fourth case, there was a cyst at the apex of the left parietal lobule as large as a pigeon's egg. These cases are interesting from the fact that none of them presented any clinical symptoms of brain tumors during life.—*Centralbl. f. d. med. Wissensch.*, July 12, 1884.

SPLENECTOMY.—DR. KOEBERLÉ recently related, to the Société Médicale de Strasbourg, his second case of splenotomy, performed on a woman, forty-six years old, for a hypertrophied spleen, the result of intermittent fever. Both this and his first case were examples of the largest spleens that had ever been removed, the organ in both cases resting on the pubis, while there was also great enlargement of the liver. The spleen in the present case measured 40 cm. (16 inches) in length, being only 5 cm. (2 inches) less than in the other case, in which the organ, when emptied of its blood, weighed over 17 pounds. The affection had run a rapid course of less than a year and a half, and at last there was effusion into the pleura, pericardium and peritoneum, the patient being much emaciated and cachectic, passing but a small quantity of urine and exhibiting a temperature of from 102° to 104° F. As in the former case, there was great adhesion to the diaphragm. In that case fatal hemorrhage had taken place from the vessels of the adhesions, but in the present case this was prevented by three ligatures on the splenic vessels. As a consequence of the constriction caused by these, arterial hemorrhage took place from a large number of cutaneous vessels along the line of incision, where complete hemostasis had prevailed for more than an hour. A great deal of blood (which was very plastic and rich in coagulable fibrin) was in this way lost; but in spite of this the patient rallied well for a while after the operation, which lasted nearly three hours; but in about an hour after its completion she was seized with convulsions and died. This case is another example of the danger of removing large spleens; but the operation was only performed at the woman's insistance, after its danger had been completely explained to her.—*Med. Times and Gaz.*, August 2, 1884.

THE FUNCTIONS OF THE PHRENIC NERVE.—J. SCHREIBER (*Pflüger's Archiv*, Bd. xxxi. S. 577) states that in narcotized and curarized dogs, the mechanical and electrical irritation of the central end of the phrenic nerve, in the region of the trunk and roots, is succeeded by a slight, but nevertheless noticeable, rise of blood-pressure. After section of the roots, from the fifth and sixth cervical nerves, irritation of the trunk caused no increase of blood-pressure. The upper root was shown to be powerless, whilst the trunk reacted.—*Centralbl. f. d. med. Wissensch.*, July 26, 1884.

THE PHARMACOLOGY OF CANTHARIDIN.—DR. EVGENY A. LIAKHNITZKY has recently made some extensive researches on this subject (*St. Petersburg Dissertation*, 1884). Frogs, dogs, and rabbits, into which he introduced cantharidin and cantharidate of soda, were used for his experiments. He sums up the results of his nearly two years' investigations as follows: 1. The physiological action of cantharidate of soda (natrium cantharidinicum) is identical with that of cantharidin. 2. Canthardin (and cantharidate of soda) produces an increase in frequency of the heart's action, in consequence of paralysis of the vagus. 3. It does not display any strongly manifested influence on the arterial tension, since the latter is lowered only under toxic doses, in the period before death, and then mainly in consequence of a growing weakness of the cardiac muscle. 4. It causes a retardation of respiration in cold-blooded animals from the very beginning, and in the warm-blooded after a preceding acceleration, the phenomenon being dependent upon the weakening of the respiratory centre. 5. It does not change the excitability of muscles or of the motor and sensory nerves. 6. In cold-blooded animals there is observed a loss of reflexes, which depends mainly upon the lesion of reflex centres in the spinal cord. 7. The main ways of elimination of cantharidin out of the system are the kidneys, the intestines, and the salivary glands. 8. On its being introduced into the blood, cantharidin is found almost in all organs of the body, but the greatest quantities are detected in the liver, kidneys, salivary glands, and gray matter of the brain. 9. The lesions of the bowels, which occur even on extravenous injections, present one of the most marked symptoms of poisoning by cantharidin. These lesions are caused by secretions of cantharidin by the intestinal mucous membrane. 10. Cantharidin produces slight oscillations of the temperature, in general tending to lowering the latter—*London Med. Record*, July, 1884.

# THE MEDICAL NEWS.

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## THE CHOLERA.

THE outlook in France, Italy, and Switzerland is not so good as it was a week ago, and the late increase of cholera at Toulon would seem to indicate that the disease has lost none of its force in the quarter where it first made its appearance, over two months since. Its gradual spread throughout southern and eastern France, crossing the Alps and invading Italy and Switzerland on the one hand, and stretching westward to the Bay of Biscay on the other, would lead us to fear that the prophecy of Professor Koch may yet be verified, that all Europe will suffer with the scourge before it takes its final departure.

In our own country, we have so far been very fortunate, escaping both yellow fever and cholera, though more than once threatened by yellow fever ships, and at least once by a cholera-infected vessel.

The vaunted "sanitary precautions" suggested as a preventive of cholera, and inaugurated in many of the villages of France, have, it is stated, proved ineffectual in staying the progress of the disease. Whether this be true or not, we cannot afford to relax our own efforts in this direction, and we believe it is incumbent upon all our health authorities, municipal, state, and governmental, to continue the work of keeping our cities and our shipping clean.

We may escape this year, the probabilities now are that we will, but the past history of this disease warns us that so long as it is in Europe we are in danger, and that winter is no certain safeguard against its progress; therefore, it behooves us to keep up the fight against filth in every form, and leave no place for the disease to obtain a footing.

## FAT EMBOLISM.

THE subject of fat embolism can hardly be said to have received its proper recognition by the surgeon, whom, of all medical men, it chiefly concerns. For although the condition would seem to be one of the possible consequences of the lipæmia of diabetes mellitus, yet in this affection it is doubtful whether it adds much to the existing dangers of the disease at the stage when it may supervene, while it would seem to be due rather to the fusion of numerous small globules of oil, and sometimes, at least, to be mistaken for the post-mortem coagulation of a blood highly charged with fat. In no other medical affections are we aware of its having been noted.

In cases of injury opening the medullary canal of bones it is an ever-present danger, and, although our resources for its prevention are as yet extremely limited, it is hardly likely that they will be increased until we thoroughly recognize the probability and symptoms of its occurrence.

The condition, at least as the result of injury, appears to have been first discovered by Zenker in 1862, although two years earlier Müller noted that the choroid vessels of a patient were filled with liquid fat, which he supposed to have come from an atheromatous aorta. Since then it has been studied by others, and especially by Wagner in 1862, Bergmann in 1863, Schwick in 1864, Wagner and Uffelmann in 1865, Pellis, Busch, and Buttlewsi in 1866, Niederstadt in 1869, Fitz in 1876, Flournoy in 1878, Egli-Sinclair, Déjérine, Scriba, Wiener, and Fenger in 1879, Saundby and Barling in 1882, Pinner in 1883, Vogt and Bardeleben in 1884, and most recently by DR. ROSWELL PARK in the *New York Medical Journal*, who furnishes an excellent historical *résumé* of the subject, discussing also the etiology, pathology, and symptomatology.

The following illustrate the phenomena of the condition: In eight cases studied by Saundby and Barling, in which there was severe injury, which none of the victims survived more than five days, fat emboli were found in the lungs. In a ninth case, which suggested the study of the others, a compound comminuted fracture of one leg had been sustained, and a long interval had elapsed before surgical treatment was applied. On the second day, the pulse, temperature, and respiration having all been increased, the patient, without any other premonitory signs, became semi-comatose, the face flushed, and the breathing stertorous. Subsequently there was marked cyanosis. These symptoms continued until death supervened, three days after the injury. After death the microscope revealed numerous emboli in the small arterioles of the lungs, and a few in the capillaries; emboli were also found in the vessels of the glomeruli of the kidneys. In none of the other cases did any

symptoms suggest the presence of the condition, but the degree of embolism, also in the lungs, was very much less.

In two cases of sudden death succeeding fracture of the humerus and neck of the femur, which occurred in men twenty-seven and twenty-eight years of age, under Bardeleben's care, fat embolism was found in the lungs. In both cases death occurred at the beginning of chloroform narcosis, and there seemed to be no disposition on the part of those reporting to ascribe death, in either case, to the anæsthetic. (*Centralbl. für die med. Wiss.*, March 8.) In another case, under Vogt (*Ibid.*), death occurred in a girl twelve years old, twenty-four hours after resection of the knee on account of fungous disease, and was ascribed to the same cause. The surgeon thought that the liquid fat which exuded abundantly from the cut surfaces of the bone was absorbed.

In our issue for May 19, 1883, we called attention to a case of fat embolism reported by PINNER, in which there was no fracture or other bone injury, but only profound laceration of the soft parts. The usual symptoms of death by fat embolism were present, and at the autopsy, emboli were found in pulmonary blood-vessels of large calibre as well as in the capillaries; also in a few glomeruli of the kidney. Pinner considered that the source of the fat here was the subcutaneous connective tissue, which was rich in it. He believes, too, that even in cases of fracture the soft tissues contribute to the fat producing the embolism, since experiments have shown that it is necessary that at least 210 grammes of fat must enter the circulation to cause death in an adult man, whose femur contains but 70 grammes. Hence some other source for fat must be found than the fractured bone, and none so likely as the soft parts simultaneously injured in fractures.

From the facts in his case, Vogt deduces that in cases of marked deformity after resection, close apposition of the cut surfaces of the bones should not be attempted, but free drainage should be secured. He further suggests that where there is marked fatty degeneration of bone, amputation and not resection should be performed. Dr. Park adds the use of every judicious means to increase the power of the heart to force the load of fat through the venous into the arterial system—digitalis, alcohol, strychnine, and, as he says, on purely theoretical grounds, inhalations of oxygen gas. He suggests that if the blood can thus be moved, the fatty matters will probably be emulsified or saponified by the alkalies in the blood. Such measures as these, together with promptness of treatment in all injuries of the kind referred to, seem to include at present all our resources in treatment.

## DOES MALE COPULATION WITHOUT EMISSION INJURE FEMALE HEALTH?

IT has been commonly believed that if the act of sexual intercourse is incomplete, by not ending in the discharge of seminal fluid within the sexual organs of the female, uterine disease is liable to result. Some writers have even gone so far as to assert that malignant disease of the neck of the womb could thus be caused. The sin of Onan was again denounced; conjugal onanism was assailed with a new weapon, and the thunderbolts of physiological vengeance were launched against the unhappy women who permitted sexual intercourse without having the womb "refreshed and soothed" by half a teaspoonful or so of one of the cheapest of human secretions. Onanism is abominable, unnatural, and there is enough ground for its absolute condemnation without involving the help of an improbable hypothesis or downright error.

Ten years ago Bertillon, writing upon *Hygiène Matrimoniale*, declared that the assertion as to the beneficial influence of the spermatic fluid upon the uterus had no scientific ground, and justly criticised the hypothesis. Nevertheless, the assertion would not die; it was vitalized by the faith and proclamation of too many doctors, and has still kept rising to the surface of periodical medical literature at occasional intervals. But now, as we think, DR. VAN DE WARKER has given it the *coup de grâce*. This able investigator and accomplished gynecologist has published in the *American Journal of Obstetrics* for August, an important paper entitled "A Gynecological Study of the Oneida Community," and the influence of non-ejaculation upon the health of women is one of the topics considered. The rule of non-emission was observed in sexual intercourse in the Oneida Community, and in such continence, more unnatural than conjugal onanism, no discharge of semen takes place either before or after the withdrawal of the penis. Now it plainly follows that if the influence of the seminal fluid upon the cervix is so necessary for the healthy state of the womb, those women of the Community whose wombs had been for years repeatedly subjected to the venereal orgasm—in some cases intercourse took place oftener than seven times a week, a more than brutal licentiousness—and had not had a drop of seminal fluid in all this time to refresh and protect them from disease, those women ought to have shown a great prevalence of uterine disease.

Seven years ago Dr. Van de Warker was asked to examine the adult female members of the Community with reference to the possible injurious effects of the sexual practices observed. In answer to this request he began such examination, but after one-fourth of the members had been subjected to it, it was stopped by order of the head of the organization. Never-

theless, enough was learned by the examinations that were made to justify Dr. Van de Warker in stating that he could discover "nothing but negative evidence as to the effect of male continence upon the health of the Community."

### THE PASSAGE OF SOLID PARTICLES FROM THE MATERNAL TO THE FŒTAL BLOOD.

WHILE the passage of substances in the form of gas or in solution from the maternal to the fœtal blood has often been proved, it has generally been denied that solid substances may be similarly conveyed. Budin writing in 1877, in the *Dictionnaire Encyclopédique des Sciences Médicales*, refers to the single observation of Reitz, in which he found that cinnabar had passed from the blood of the mother to that of the fœtus, and regards the proof as not conclusive. He further adduces the negative evidence which Hoffman and Langerhans, Jassinsky, and Fehling have, after many experiments, given. He states that the passage of living formed elements, though easily explained by the theory of diapedesis, has never been ascertained; it is denied by Claude Bernard, and the experiments of Davaine, of Brauell, and of Bollinger prove equally that solid poisons, or those having form, are alike retained at the level of the two placentas, and cannot communicate their injurious action to the fœtus. While then the transmission of micrococci from the mother to the fœtus is regarded by Budin as disproved, he considers the fact of the latter being affected with variola, a disease which it is believed is dependent upon a microbe, as an inexplicable and contradictory fact.

Tarnier, in 1881, in his *Traité de l'Art des Accouchements*, is equally positive, stating that all experiments which have been made up to the present time prove that solid substances, even in a state of minute division, cannot pass through the membrane which separates the maternal from the fœtal blood. Charpentier, in 1883, also said that experiments tend to demonstrate that if liquid or gaseous substances pass, it is not true for solid substances, whatever the variety or however minute the division.

The recent investigations of DR. J. P. PYLE contradict these generally accepted views, showing that solid particles and bacteria may be transmitted from the maternal to the fœtal blood. The experiments were made in the Pathological Laboratory of the University of Pennsylvania, under the direction of Dr. Formad, and hence have presumptive evidence of reliability. In nineteen pregnant rabbits, a solution of ultramarine blue was injected into the blood-vessels, and of the sixty-one fœtuses obtained from these animals, forty-six showed the presence of blue granules in their tissues. Further, septic matter was introduced into the tissues of ten pregnant rabbits, and not only the mothers were found to have bacteria in their blood, but these bacteria were also discovered in the blood of the fœtuses.

Dr. Pyle further had the opportunity of examining the blood of a pregnant woman after death from septicæmia, and also that of her dead fœtus, which was removed by Cæsarean section, and in the blood of each vast numbers of micrococci were found. If the correctness of these experiments is verified, an important advance in our knowledge of the relations between the maternal and the fœtal blood has been made.

In one part of his paper Dr. Pyle states that the walls of ordinary bloodvessels, through which white blood-corpuscles migrate in any part of the body, are not thicker than the membrane interposed in the placenta between the maternal and the fœtal blood, and hence he regards it as plausible that the blood corpuscles might pass through that membrane. We cannot regard his experiments as proving such transference of blood globules from the mother to the fœtus—a suggestion which is in the highest degree improbable. Leucocytes are three or four times more numerous in the fœtal than in the maternal blood, and if these entered the former to be used in the formation of red disks—this being one of the probable theories of the origin of the latter—those disks ought not to present such wide variations in size, so different in this respect from the maternal blood; further, the hæmoglobin in the fœtal is decidedly greater than in the maternal blood. The blood of the fœtus and that of the mother have these among other marked differences, and it is in the highest degree improbable that the former receives from the latter corpuscles white or red, but it still will be held that the fœtus makes its own blood as to the anatomical elements, while the plasma only is furnished by the mother.

### THE LAW REGULATING THE SALE OF POISONS.

A LAW of Pennsylvania says that no one shall

"dispose of, by retail, any morphia, strychnia, arsenic, prussic acid, or corrosive sublimate, except upon the prescription of a physician, or on the personal application of some respectable inhabitant of full age of the town or place in which such sale shall be made, and in all cases of such sales, the word 'poison' shall be carefully and legibly marked or placed upon the label, package, bottle, or other vessel or thing in which such poison is contained."

A careful perusal of this clause shows that it is not as clear, or as comprehensive as it should be. It does not state whether it is intended to apply to sales *in bulk only* of the poisons mentioned, or also to mixtures and physicians' prescriptions containing them in such quantity that the dose directed is harmless, while a part or the whole quantity dispensed would be fatal to a person taking it.

To us it seems quite clear that all sales in bulk are

within the intent of the law, and that every bottle of the officinal solution of morphia or a solution of corrosive sublimate even of the strength of a grain or two to the ounce must be labelled "poison." But it is not clear that it was intended to apply to the combinations and prescriptions into which the substances named enter in such quantities, that the dose ordered is harmless. Such an interpretation would render the law almost disastrous in its consequences; and would make it necessary to label nearly every second bottle of medicine dispensed on a physician's prescription with the terrifying word "poison." Not only this, but every bottle of paregoric, and of Brown mixture, every box of Wistar's cough lozenges, and a hundred or more articles which are daily sold over the counters of druggists must be so labelled. The effect of this upon the mind of the average patient can easily be imagined. It has been within the experience of almost every physician to have a patient say the medicine prescribed was not administered, because the prudent apothecary had, by way of caution, suggested care in its use.

It seems scarcely necessary to dwell further on the utter absurdity of such an interpretation of the law. Yet a coroner's jury in this city recently declared that an apothecary's clerk was criminally negligent because he failed to place such a label upon a box of pills of which each contained one-twentieth of a grain of sulphate of strychnia. The pills were prescribed by a physician, and the dose ordered was one, "at meals." This verdict was rendered because it happened that of several persons who, in a spirit of banter, had taken a number of these pills, a young girl, who took fourteen, died.

Stupid as this action may seem, it may not be without its good result. The interpretation of the coroner's jury may be literally correct, but it is not the interpretation of intelligence, nor is it called for by the purpose for which the law was enacted.

That the law is not as comprehensive as it should be is shown by the fact that the few poisons named in the Act are but a small number of those the sale of which should be carefully regulated by law. The list should be enlarged to include aconite, atropia and its salts, cantharides, digitalis, and many others.

It is to be hoped that the unfortunate fate of the heedless girl and the inconvenience and annoyance to which the apothecary's clerk was subjected, may be the impulse which will secure an amendment to a law which is so obviously inadequate.

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### MODIFIED COLOTOMY.

IN the *Beilage zum Centralblatt für Chirurgie*, No. 23, 1884, may be found a suggestion of MADELUNG, of Rostock, in regard to the treatment of carcinoma of the rectum which is beyond the reach of extirpation. Instead of performing an ordinary lumbar colotomy, he cuts through the entire calibre of the gut, attaches its central end to the external wound, and returns the peripheral end, after closure of its lumen, into the cavity of the belly. The advantages of the procedure, in addition to diminishing the disposition to prolapse of the gut, are that it removes the mechanical, septic, and chemical irritation to which the carcinoma is subjected by the retention and passage of feces in the ordinary operation, and that it prevents the annoyance and discomfort which arise from the accumulation of feces between the lesion and the external sphincter.

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### WAS COLOR-BLINDNESS THE CAUSE OF THE LOSS OF THE TALLAPOOSA?

THE collision and sinking of the U. S. Steamship Tallapoosa, and consequent loss of life, it seems quite probable, may be another example of the results which we are called upon from time to time to chronicle of the baneful indisposition of our legislators to grapple with the subject of color-blindness in its relation to railroad service and navigation; any legal enactment concerning which is extremely unpopular with railway and steamship employés, who constitute an influential portion of our voting population.

A sailor, who says he was in the pilot-house of the Tallapoosa at the time of the collision, stated to an Associated Press reporter, that during the momentous minutes immediately preceding the collision "the captain, navigator, and mate saw the lights of the schooner, but disputed whether it was the green or the red light." And thus vital moments were wasted, and finally when the Captain decided what course to take, it was too late to avoid a collision.

In the official inquiry which is about to be held, we hope the Navy Department will direct a special investigation to be made by a medical expert concerning the color-vision and acuity of sight of all the officers and men whose duty it was to have seen the lights of the colliding schooner, and thus definitely determine if defective color-vision, the existence of which had not been previously ascertained, was responsible for the sinking of the Tallapoosa.

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WE are glad to call attention to the excellent objection urged by our esteemed contemporary, the *New York Medical Journal*, to the general use of the word albumen. The white of egg, known in its entirety as albumen, is not identical with the precipitate from albuminous urine, and such being the case, the words used to indicate the two substances should not be identical.

# SPECIAL ARTICLE.

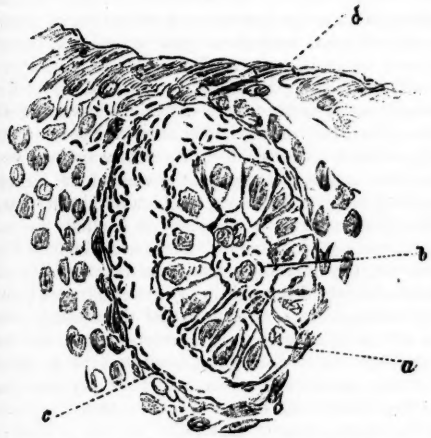
## THE CHOLERA CONFERENCE AT BERLIN.

(Continued from page 223.)

THE Conference upon cholera at the Office of the Imperial Board of Health in Berlin, on the close of Dr. Koch's address, the conclusion of which we reproduce in abstract below, adjourned till July 29th, when it was occupied with several questions arising out of the discovery of Dr. Koch, upon which he made further observations. We hope later to give an outline of this meeting, which is reported verbatim in a supplementary issue of the *Berliner klinische Wochenschrift*, August 11th.

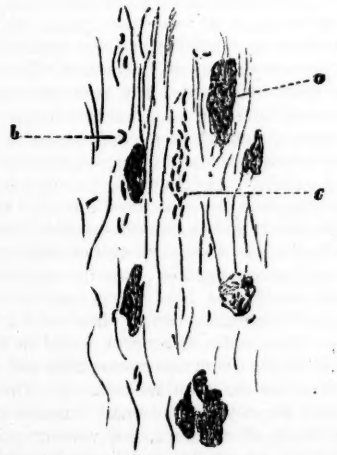
Before giving the conclusion of Dr. Koch's address we may draw attention to the subjoined illustrations of specimens which were exhibited, and referred to by him in that portion of his paper which appeared in our previous issue.

FIG. 1.




Surface of mucous membrane denuded of epithelium. Section of the mucous membrane of the cholera-intestine. (*a*) Tubular gland cut obliquely. Within it (*b*) and between the epithelium and the basement membrane are (*c*) numerous comma-bacilli. × 600 diameters.

FIG. 2.

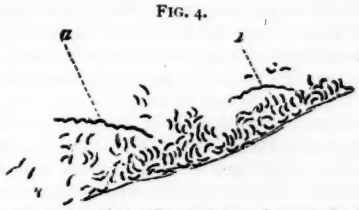



Cover-glass preparation of contents of cholera-intestine. (*a*) Nuclei of dead epithelium. (*b*) Semicircular comma-bacillus. (*c*) Characteristic grouping of comma-bacilli. × 600 diameters.

FIG. 3.

Cover-glass preparation. Cholera dejecta on moist huckaback (2 days old). Great increase of comma-bacilli, showing (*a*) the S forms. × 600 diameters.

FIG. 4.




Cover-glass preparation. Pure cultures of comma-bacilli on the side of a drop of meat-broth. (*a*) Long screw-shaped (corkscrew) threads. × 600 diameters.

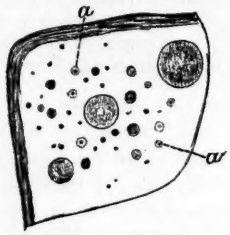
FIG. 5.

*a*, Youngest colonies. *b*, After liquefaction of gelatine. Colonies of comma-bacilli on gelatine plate. Enlarged 80 times.

FIG 6.

Funnel-shaped infiltration in gelatine in a reagent-glass.

FIG. 7.




Appearance of colonies on the gelatine plate. Natural size.

CONCLUSION OF DR. KOCH'S ADDRESS.

Being thus convinced as to the distinctive characters of the common bacillus, the next thing was to determine the relation in which it stands to the cholera process, and whether it ever occurred in non-choleraic cases. In the ten examinations made in Egypt, this point was only tested microscopically, no cultivations having then been made. In India the intestines were examined in forty-two cases, both microscopically and by cultivations, and in not one was the bacillus absent; in very acute cases it was found almost unmixed. Choleraic dejecta from thirty-two cases yielded similar results, but in only two out of many observations on vomited matter were bacilli found. It was probable that in these two cases the vomit contained fecal matter. Bacilli were also found in specimens from eight cases sent by Drs. Kartulis and Schiess-Bey from Alexandria, and in two cases examined at Toulon in conjunction with Drs. Strauss and Roux, and in the choleraic dejecta of two other cases. One of these Toulon cases was that of a sailor attacked with cholera when convalescing from malarial fever; he died four hours after the seizure, and the autopsy was made half an hour after death, it being always an object to make such an examination as soon as possible. In this, as in other acute cases, the intestines contained almost a pure growth of the comma-bacillus. The other Toulon case was similar, but in neither was the microbe found by Strauss in Egypt detected in the blood.

Thus the comma-bacillus has now been found in nearly one hundred cases of cholera, occurring in a constant relation to the cholera process, being most abundant in the lower end of the ileum, where the changes are most intense, and being most pure in the acute uncomplicated cases. On these grounds the comma-bacillus may be considered as specific to cholera. Many observations were made in other diseases, and in subjects who had recently passed through attacks of cholera, without finding these bacilli in the dejecta or in the bowels. These observations included cases of dysentery, typhoid fever, bilious typhoid, and infantile diarrhœa; the secretions of the mouth, which are so rich in bacterial life; the intestines in arsenical poisoning; but, although bacteria of all kinds were met with, the comma-bacillus was conspicuous by its absence. Similar negative results followed examination of the drain-water of Calcutta, and the impure tank-water in the villages on the banks of the Hooghly. Once only in the water flooding the region of the salt water lake east of Calcutta was a bacterium found at first sight resembling the cholera bacillus, but on further scrutiny it proved to be thicker, and not to have the power of liquefying gelatine. In his own experience and that of other bacterologists, a similar form to the comma-bacillus was unknown. Three different views as to its relation to the cholera process are tenable:

1. That the disease favors the growth of these bacilli by affording them a suitable soil. If so, it would mean that the bacillus in question is most widely diffused, since it has been found in such different regions as Egypt, India, and France; whereas the contrary is the case, for the bacilli do not occur in other diseases, nor in the healthy, nor apart from human beings in localities most favorable to bacterial life. They only appear with the cholera,

2. It might be said that cholera produces conditions leading to a change in form and properties of the numerous intestinal bacteria—a pure hypothesis; the only instance of such a conversion refers to a change of physiological and pathogenic action, and not of form. Anthrax bacilli under certain conditions lose their pathogenic power, but undergo no change in shape; and that is an instance of a loss of pathogenic properties, whilst there is no analogy to support the view of the harmless intestinal bacteria becoming the deadly cholera bacilli. The more bacterial morphology is studied, the more certain is it that bacteria are constant in their form; moreover, the comma-bacillus retains its special characters unchanged through many generations of culture.

3. Lastly, there is the view that the cholera process and the comma-bacilli are intimately related, and there is no other conceivable relation but that the bacilli precede the disease and excite it. "For my own part," said Dr. Koch, "the matter is proved that the comma-bacilli are the cause of cholera."

If this be so, experimental confirmation of the fact might be expected; and, were authors to be trusted, there should be no difficulty in this, since it has been stated that cholera occurs in cattle, dogs, fowls, elephants, cats, and other animals. But there is no evidence of such animals being spontaneously attacked with the disease during cholera prevalence: and direct experiments have either proved negative, or, if positive, have been inconclusive or been contradicted by others. The experiments of Thiersch on white mice, to which so much importance has been attached, have been repeated by Koch with recent and with decomposing choleraic material, the mice remaining unaffected. Experiments were also made upon monkeys, cats, fowls, dogs, and various other animals, but nothing like a cholera process was observed; and a similar result followed experiments with the comma-bacillus in all stages of its development. Animals were fed with large quantities of the comma-bacillus, with the result that the bacilli were found to be destroyed in the stomach, none appearing in the intestinal canal. It is not so with other bacteria—*e. g.*, a red micrococcus found in Calcutta. Dr. Barclay fed mice with this micrococcus and obtained cultures of it from the intestinal contents. The bacillus was injected directly into the small intestine and into the large bowel of monkeys, but without result; nor was any better success obtained by such measures employed after irritants had been introduced into the intestine. The only experiment which at first seemed to promise results was when pure cultures were injected

into the blood of the rabbit or into the abdominal cavity of the mouse. The rabbits became very ill after the injection, but recovered; the mice died in from twenty-four to forty-eight hours, and the comma-bacillus was found in the blood. It would seem as if, unlike other experiments on infective disease, very large quantities of the virus had to be employed; but to assure himself of the capability of infecting animals with cholera, Koch made special inquiry as to whether animals in India ever had the disease. He learnt that in the densely populated province of Bengal, where many kinds of domestic animals are to be found under conditions favorable for infection, cholera was unknown among them. They appear to enjoy an immunity, and are incapable of being experimentally infected—a fact which is not fatal to the view that the comma-bacillus is pathogenic; for, apart from experimentation, no other explanation of its connection with cholera is possible than the causal one.

Leprosy is not communicable to animals, and yet the lepra bacillus must now be regarded as the cause of the disease. It is probably the same with typhoid fever, which is not communicable to animals. It is enough to ascertain the constant occurrence of a special kind of bacterium in a disease, and its absence in other diseases, its occurrence corresponding with the pathological lesions and the course of the disease. And there are some animal diseases not transmissible to man —*e. g.*, rinderpest and pleuro-pneumonia. Parasites have their special hosts; many kinds of animals have their own tapeworm, which cannot develop in any other. Again, there is a whole group of diseases, especially the exanthemata, conceivably dependent on micro-parasites; but no one has ever yet shown that a disease can produce a specific organism. In cholera we have instances amounting to actual experimental infection of man—*e. g.*, the infection of those who are engaged in washing linen soiled by choleraic dejecta. Such linen contains the bacilli often in a pure form, and if infection occur through this medium, it must be by means of the comma-bacilli, the only microörganism present. The hands may be soiled and the bacilli introduced into the mouth by direct contact or through the food, or drops of the washing water may come in contact with the lips, and thus in some way the human being is fed with a small quantity of a pure culture of comma-bacilli. Another instance was found by Koch in the case of a tank of which the water was used for drinking and other purposes by many people among whom cholera was raging. He found the comma-bacilli in this tank, and learned that the linen of the patients was washed in it. Around the tank were some thirty or forty huts, inhabited by two hundred or three hundred people; of these, seventeen died, the number taken ill not being ascertained. The tank also received the refuse from the dwellings. The Hindoos bathe in the tank, wash their utensils in it, and deposit excreta on its shore; and if a hut has a latrine, its outflow is into the tank. Now, it was found that after a time the bacilli became less abundant in this water, and coincidentally the cholera declined; whereas, had the epidemic been the cause of their presence, and not the result, the number of bacilli should have increased in it.

The whole etiology of cholera, so far as it is known, suggests the view taken as regards the comma-bacilli. They multiply rapidly, soon reach their term, and are supplanted by other bacteria. So in the intestine they multiply, set up irritation and diarrhœa, and all the typical symptoms of the choleraic seizure. Under normal conditions—in animals at least—the bacilli are destroyed in the stomach, and this harmonizes with the important part played by predisposition, and the liability of those to be attacked who are suffering from gastric or intestinal catarrh, or who have overladen the stomach with undigested food, conditions which would facilitate the passage of the bacilli unchanged into the intestine. But the bacillus is limited to the intestine; it is not found in the mesenteric glands or in the blood. How, then, can it destroy life? Probably from the production of a poisonous substance, such as is produced by bacteria in putrefaction. In a gelatine culture of the comma-bacilli with which blood-corpuscles were mingled, the corpuscles became destroyed as the colony grew, and it is probable that the bacilli exert a like destructive influence on other cells. That some poison is produced gets confirmation from the experiments of Dr. Richards, of Goalundo, who fed pigs with choleraic material, death ensuing from convulsions in from fifteen minutes to two and a half hours. This must have been due to "intoxication," and not, as Dr. Richards states, to choleraic infection, for another pig, fed on the intestinal contents of one of those so killed, remained healthy. If it had been choleraic virus, it should have been transmissible. These experiments prove that in cholera the dejecta contain certain substances poisonous to swine, whereas dogs, mice, and other animals are unaffected by it.

Assuming that the bacilli produce a specific poison, the phenomena of cholera may be thus explained: The poison acts locally in destroying the mucous membrane, and, being absorbed, it acts generally, and especially paralyzes the circulatory organs. All the symptomatology of cholera, usually considered as due to the loss of water and thickening of the blood, is explicable on this view. Death may occur in this stage of cholera-poisoning when but few local changes are found, and the intestinal contents exhibit a pure culture of bacilli. If this stage be passed through, there occur necrotic changes—hemorrhages and putrefaction—with symptoms due to the absorption of putrefactive products, usually described as cholera-typhoid. And there is abundant evidence of the cholera virus occurring in the dejecta, and rarely in the vomit. For the further dissemination of the disease it is necessary that the dejecta should be retained in the moist state, for drying destroys their potency; and this fact is borne out by the spread of the disease through the water supply, or more directly by soiled hands, or even conveyance through insects, or blow-flies to food. Drains may be infected, and through them the water supply. As the virus cannot be retained in the dry state, aerial infection seems impossible; nor has cholera ever been conveyed by merchandise or by letters, even if these are not disinfected and fumigated. Cholera can only be spread by human intercourse—a fact sometimes wanting in proof because it is overlooked, for the mildest case may be as infective as the most severe. The diagnosis of such mild cases by the detection of the comma-bacillus becomes thus of much importance.

That the virus can be reproduced and multiplied out-

side the body is apparent, since the bacillus can be cultivated artificially, and its growth is not affected by comparatively low temperatures. Probably it does not grow in streams and rivers, where, owing to the current, a sufficient concentration of nutrient substance does not occur; but in stagnant water and at the mouths of drains, etc., vegetable and animal refuse may accumulate and afford the necessary nutriment. Thus is explained the propagation of cholera by the subsoil water, and the increase of epidemics with the sinking of its level, which lessens the flow and diminishes the amount of surface water.

Admitting the dependence of cholera upon this microorganism, it is impossible to conceive the disease having an autochthonous origin in any particular place; for a bacillus must obey the laws of vegetable life, and have an antecedent; and since the comma-bacillus does not belong to the widely diffused microorganisms, it must have a limited habitat. Therefore the occurrence of cholera on the delta of the Nile does not depend on its resemblance to the delta of the Ganges; but the disease must have been imported there as it is into Europe. It was once thought that an outbreak in Poland had a local origin until it was discovered to have been introduced from Russia. Again, about ten years ago, there was a sudden outbreak at Hamar (Syria), thought to be an instance of local origin, but erroneously, as shown by a statement of Lortet, who told Koch, when at Lyons, that the epidemic had been introduced into Hamar, where he was at the time, by Turkish soldiers from Djeddah. Indubitable instances of local epidemics arising outside India are not known, and everything confirms the view gained by experience that the cholera is due to a specific organism having its home in India. It used to be thought that the disease had started from Ceylon, Madras, or Bombay, but there is now general concurrence in regarding Bengal, the delta of the Ganges, as the original source. This is the only region where the disease never varies from year to year, for although some other regions, as Bombay, are never free from it, yet it is highly probable that this is due to its continued reintroduction. The upper region of the Ganges delta is thickly populated; the lower district, Sondarban, covering an area of 7500 English square miles, is uninhabited, and here the Ganges and Brahmapootra break up into a network of watercourses. The district abounds in luxuriant vegetation and in animal life, and is the seat of inundations and the home of pernicious fevers. Here it is probable, where the vast amount of decomposing vegetable and animal life affords a suitable soil, that the cholera bacillus flourishes. All great epidemics begin with an increase of cholera in South Bengal. The inhabitants of Lower Bengal dwell in huts raised on mounds to protect them against inundation, the excavations thus formed making the so-called "tanks," which are very numerous in the district of Calcutta and its vicinity. Since 1870, when new drainage works and water supply were introduced, the mortality from cholera in Calcutta has become much reduced; but the retention of many of these tanks and the nature of the native dwellings still account for the spread of the disease. A remarkable instance of the disappearance of cholera under improved water supply is afforded by Fort William, which used to have many cases annually. Other Indian towns show the same good result of improved water supply—*e. g.*, Madras, Bombay, and Pondicherry, where some years ago the formation of artesian wells banished cholera; and although cases reappeared there last spring, Dr. Furnell, of Madras, ascertained that the cases were limited to the part of the town not yet supplied with these wells.

Although contamination of drinking water may be the chief mode of spread, this is not the only way, and each place has its own conditions, which have to be dealt with. The diffusion of cholera in India depends on human intercourse, especially on pilgrimages, which are carried on to an inconceivable extent—*e. g.*, hundreds of thousands flock yearly to Hurdwar and Puri, remain there many weeks herded together, bathing in the tanks that supply them also with drinking water. Over the borders of India the cholera is carried into Persia, and, in the old caravan days, thence to the south of Europe; but the route is now by the Red Sea and Suez Canal. Every year the danger to Europe by this route increases, for Bombay, which is seldom free from cholera, is but eleven days distant from Egypt, sixteen from Italy, and eighteen or twenty from France. It is also clear that the greatest danger lies in ships carrying large numbers of people, as troops, pilgrims, coolies, and emigrants, and not to the merchant vessels with small crews, for in the former the outbreak of an epidemic would be likely to last till Europe was reached. In the reports of the Sanitary Commissioner of India, 1881, it is stated that out of two hundred and twenty-two coolie ships, carrying from three hundred to six hundred, which had left India for American colonies in ten years, thirty-three had cholera on board, and in sixteen the epidemic lasted more than sixteen days.

Why outbreaks of cholera outside of India die out is probably due to different factors. One is that an attack of cholera confers immunity, at least during the period of one epidemic, and whole districts may enjoy a similar immunity for a time; cholera having been in the place one year, passes it by in the next. Another is, that the bacilli do not pass into the "resting state." And a third is the check given to their development by temperatures below 17° C.

In conclusion, Dr. Koch adverted to the subject of treatment, and reminded those who say that such discoveries do not enable us to cure the disease better than formerly, that a rational treatment of most diseases, and especially of infectious diseases, cannot be adopted until their cause and nature are known. But even yet the discovery of the cholera bacillus is important, as furnishing an aid in diagnosis which would facilitate the detection of the first case occurring in a district, and the adoption of measures to prevent its spread. Knowing also the nature and properties of the bacillus, and especially the readiness with which it is killed by drying, the right direction of prophylaxis is assured, and the lavish expenditure of disinfectants checked, so that there will not be a repetition of what happened in the last epidemic, when millions of gallons were poured into the gutters and sewers without the slightest need. Even therapeutically, the knowledge of the comma-bacillus may be of value. Diagnosis will be possible in mild cases, and in the early stages of the disease, when treatment is of most avail.

### STRAUSS AND ROUX'S CHOLERA RESEARCHES AT TOULON.

In connection with Dr. Koch's remarks it will be interesting to read the following statement which MM. STRAUSS and ROUX have recently submitted to the Académie de Médecine as the result of their researches on the cholera at Toulon. These researches are the continuation of those begun in Egypt, with Thuillier and Nocard, in 1883. Eighteen autopsies were made under very favorable conditions, and the dejecta, vomit, and urine of numerous patients were placed at their disposal. The first autopsy made dispelled all doubt as to the nature of the disease.

As is well known, repeated efforts were made in Egypt to discover a specific organism in the intestinal coats which could be held responsible for the disease and the lesions. At Toulon these efforts were renewed.

According to Koch, the cholera in Egypt and that in India was characterized by the presence in the intestinal mucosa of a characteristic bacillus. The observations made by MM. Strauss and Roux at Toulon fully confirm those they made in Egypt, to wit: that in the intestinal mucous membrane of certain cholera patients the most diverse organisms were found, especially if the disease had lasted for some time. But in the more rapid cases they were much less numerous, and in subacute cases could not be found at all. Of the eighteen intestines of cholera cases examined at Toulon, eleven, or more than one-half, contained no microörganisms, in spite of the most careful examination. Upon conference with Dr. Koch, on his arrival at Toulon, they found that their methods of coloring were identical with his. They maintain, therefore, that in a large number of cases of cholera (and particularly in the more characteristic cases) no microörganisms are found in the intestinal tunics.

In his fifth and sixth reports, from Calcutta, Koch gives precise details as to the organism which he regards as the cause of cholera. The cholera bacillus, he says, is not entirely straight, but more or less curved, etc. At Toulon, while wishing to show his methods for finding the microbe, he used no special color-procedure. A small amount of dejecta was spread out in a thin layer and dried; the preparation thus obtained was slightly heated and colored with an aqueous solution of aniline or methylene blue. When, as was systematically done at Toulon, MM. Strauss and Roux examined the characteristic cholera stools, it was seen that they contained a great number of different microorganisms, and in many cases there were a small number of comma-shaped organisms. The intestinal contents, removed from the bodies under the most favorable circumstances, showed also, in the greater number of cases, various kinds of microörganisms, among which were the comma-bacilli, but they did not seem to predominate over the others. In thirteen cases, also, examinations, made under favorable circumstances, of the contents of the small intestine, showed the comma-bacilli in large numbers in three cases; in four cases only a small number were found; and in five cases they were absent. It is true that the conditions regarded by Koch as particularly favorable for finding the comma-bacilli are of short duration; according to him only the stools which are fecal from the commencement of the attack, and not those which are passed during the period of reaction are favorable; and he recommends the examination of the contents of the small intestine—taken promptly from a subject who has died during the algid period of a rapid case of cholera.

In a fulminant case, the autopsy of which was made by Koch, MM. Strauss and Roux found the small intestine lined with a sort of grayish-white, stringy mucus, a portion of which, when spread out in a thin layer and colored, showed a large quantity of comma-bacilli. They were, so to speak, in a pure culture in this mucus. In the eighteen autopsies which they made, they found in one other case, in which death had supervened very quickly, the same appearance in the small intestine, and the same abundance of the comma-bacilli.

These cases are very seductive, and lead one to accord an important *rôle* to the comma-bacillus in cholera; but there are others, and they are the more numerous. The variety of organisms which is found in the intestinal contents is so great that no one appears to preponderate over the others. In these cases Koch resorts to culture in order to bring out the comma-bacillus.

During cultivation, these organisms are sometimes joined end to end, and then take the form of an S, or the form of spirilli. It is this appearance of the culture in gelatinized bouillon which Koch regards as characteristic. The comma organism requires an alkaline medium for its development, and multiplies with great rapidity in most alkaline media at a temperature between 60° and 107° Fah. It is certain, then, that there often exists in the rice-water discharges, and in the intestinal contents of cholera patients, a bacillus shaped like a comma; and that in certain cases this bacillus is found in a state of almost purity in the mucus lining the intestine. Is one justified in concluding that the comma-microbe is the organism of cholera? MM. Strauss and Roux answer no. In default of the direct proof which the inoculation of the comma-microbe upon animals would furnish (and all such experiments have so far failed), Koch is obliged to show that the organism which he describes is only found in the intestine of the cholera patient, and never in the healthy man, or in persons with any other disease than cholera. And to do this a great many experiments would have to be made, for it would be only necessary to find it once in a disease other than Asiatic cholera to settle the question definitely. Furthermore, the comma organism cannot of itself be regarded as characteristic of cholera, for it has been found in products which have nothing to do with cholera. Maddox, of London, has photographed a comma-shaped microbe, which he found in a reservoir of water; and Malassez has shown them, in a preparation of dysentery stools, and amongst many other organisms, bacilli of a well-characterized comma form. In the vaginal mucus of women with leucorrhœa, and in the mucous uterine secretion of a woman who had commencing epithelioma of the cervix, they have found bacilli of a comma shape like those of cholera. The comma form is not, therefore, characteristic of cholera. It is very important to try, in the cases which they have cited, to isolate by cultivation the microbes which have a similar form with those described by Koch, and to see how they comport themselves in different media. This is the only way in which they can be distinguished.

If the comma-bacillus be the true cause of cholera, as

it only resides in the contents of the intestines, and as in the rapid cases it does not invade to an appreciable extent the intestinal mucosa, it must be admitted that, in order to produce such rapid and intense effects, it secretes a soluble ferment, a ptomaine, or some poison, very energetic, which causes symptoms of cholera when absorbed. Attempts should therefore be made to extract from the pure cultures in which the bacilli have lived, a soluble poison which will reproduce in animals symptoms analogous to those observed in cholera patients. It would be also interesting to know if the comma-microbe is found in cholera nostras.

In their report on the cholera in Egypt, MM. Strauss and Roux mentioned the presence in the blood of cholera patients of extremely fine particles resembling organisms. At Toulon the same appearance was observed in many cases, but was wanting in a few. They think that these particles are due to a special alteration of the hæmoglobin, and this opinion is in accord with that of Malassez.

## REVIEWS.

THE LAWS OF HEALTH: PHYSIOLOGY, HYGIENE, STIMULANTS, AND NARCOTICS. FOR EDUCATIONAL INSTITUTIONS AND GENERAL READERS. Copiously illuslustrated. By JOSEPH C. HUTCHISON, M.D., LL.D., Author of a Treatise on Physiology and Hygiene; Ex-President of the New York Pathological Society, etc.; late President of the Medical Society of the State of New York, etc. Pp. 223. New York: Clark & Maynard.

THE production of this volume of popular hygiene and care of the health, by a gentleman of Dr. Hutchison's eminence in the profession, is a step, and a long step upon good firm ground, in the right direction. The more it is possible to educate the rising generation, the hope of America, in the judicious management of their own bodies so as to prevent disease and premature death, the more certainly may we expect an improved race of mankind to follow in our footsteps. And just in proportion as we can aid to dissipate the shadow of ignorance which covers the bodily functions in health and illness among the people, will we deliver them from the dominion of the various medical heresies and delusions, which prey upon their longevity, vigor, and estates, and contribute our professional share toward discharging the great philanthropic duty of leaving the world better than we found it.

This work is singularly adapted to the object it has in view, being throughout strictly accurate and thoroughly scientific in statement, and yet at the same time perfectly clear and comprehensible to even a child's intellect. The dryness of mere anatomical detail is made interesting by the association with it of descriptions of function, and practically useful by demonstrating the invaluable assistance afforded by this kind of knowledge to human beings in their great business of preserving health.

The bones, muscles, and skin are first considered; then follow chapters upon food and drink, digestion, circulation, and respiration; the nervous system, the special senses, and the voice being appropriately discussed after the attentive pupil has gained a general comprehension of nature's methods of construction and operation. A valuable appendix contains directions for the treatment of poisoning, drowning, and other medical or surgical emergencies, comprising a most important part of that general medical knowledge which it is the duty, and should be esteemed the privilege of every true physician to popularize on all suitable occasions.

The numerous figures of this book are excellent, and admirably illustrate what they are intended to aid in explaining, and, indeed, the mechanical execution in every respect reflects great credit upon the publishers.

Dr. Hutchison's Laws of Health comprise one ordinance in regard to alcohol, which he declares on p. 52, the organs of the body "abhor," that will, no doubt, stir up much adverse criticism of the volume, which, however, we think it will prove itself quite able to endure without serious injury. On the other hand, it should receive everywhere enthusiastic praise from the advocates of temperance, whose views it teaches so earnestly, and yet with the exception quoted above, so justly and temperately, as to commend the exposition to honest seekers after truth, upon this momentous question of the day, and still more of the coming century.

## CORRESPONDENCE.

### RAPID GENERALIZATION.

*To the Editor of* THE MEDICAL NEWS.

SIR: As we claim for medicine the name of a science, or, rather, a group of sciences—etiological, pathological, diagnostic, and therapeutic—it is important for the cautious scientific spirit to be cherished in our investigations. Is it always so of late?

I do not propose to add now to the discussion of the *bacillus tuberculosis;* merely observing that the published results of Wargunin (mentioned in an editorial in THE MEDICAL NEWS of August 9) strongly confirm the view that all needful evidence is not yet in on that subject.

Dr. Robert Koch is a splendid minute observer and patient master of mycological experimentation; but it does not follow that he is also a master of inductive and deductive reasoning. Cholera is not a new subject of investigation, although the comma-shaped bacillus is so stated to be. As to this, however, *Science*, of July 25, 1884, contains the following statement: "In the report of the Surgeon-General of the Navy for 1881 (Washington, 1883, p. 70) are to be found photo-micrographs, and a short account of a comma-shaped bacterium, a rather unusual form, observed by Surgeon J. H. Kidder in water through which air had been aspirated (summer of 1881), and in well-water near Washington (1883). . . . . Dr. Kidder supposed the form which he photographed to be the same as, or very similar to, that noted and figured by Billroth (*Untersuch. über Coccobacteria Septica*, Berlin, 1874, taf. ii., B. C.), found in the droppings from an imperfect water-faucet in his work-room, and called by him syphonomyxa nostocomii Vienniensis."

While, however, the asserted association of the comma-bacillus with cholera belongs clearly to Dr. Koch, it is not too great boldness to follow such an authority as Virchow in denying, as he is reported to

do, that the bacillus has not yet been proved to be the *cause* of cholera. Several things are in the way of this. Why should no bacilli be found in the stomach, as well as in the intestines? Surely, the rice-water vomit is as characteristic as the discharges from the bowels. Especially is this notable in connection with the current supposition — very erroneously called a "demonstrated fact"—that drinking-water, specifically contaminated, is the only medium of propagation of the disease. How can bacilli enter by drinking-water, except through the stomach?

Pasteur has well criticised some of Koch's practical recommendations. The latter, for example, fears the proposed purifying use of water, because drying most rapidly kills the bacilli. Yet abundant evidence everywhere establishes the beneficial action of water, freely used, as Nature's best disinfectant; most efficient, it is true, in the form of highly heated steam.

Consul Mason's acceptance of the "transportation" of the cholera all the way from China, in a specified vessel, at a time when no cholera was known to exist in that country, and when the official head of the French Naval Sanitary Bureau denied the fact of any such conveyance, was quite too ready, originating, no doubt, in the same conviction (viz., that there must have been some such transportation) as that which induced Dr. Koch to assert that it was brought by some English vessel whose officers falsified its health record.

Such strong effect do prepossessions in favor of foregone conclusions have upon the minds of men in and out of the profession, that facts glaringly in the way of these conclusions are systematically ignored. Of this nature, in regard to cholera, are some facts amply authenticated and publicly recorded from time to time. I may mention now only the following: During the summer of 1854, two packet-ships of the Copes' Line, between Liverpool and Philadelphia, the "Tonawanda" and "Tuscarora," were attacked with cholera in mid-ocean (the former two weeks out from port) when no cholera at all existed at Liverpool when they left. Conversing recently on these occurrences with a member of the shipping firm which was then running those packets, he stated to me his knowledge also of one instance in which a ship going from *Philadelphia toward Liverpool*, when no cholera existed at either place, was attacked in midocean with the disease.

If we had some of the patience in getting *all* the facts which led Kepler to try nineteen other hypotheses before concluding on his three great laws, and which induced Newton to delay for years the announcement of his law of gravitation, because a few facts concerning the moon's motion did not appear to agree with it, medical science would gain in credit and usefulness. If, for example, the idea which commonly prevails in India were regarded at least with some question and toleration in Europe and America, that cholera is not contagious, but a *migratory epidemic*, travelling on its own caprice, and fastening upon filth-spots wherever it goes, the annoyances, not to say horrors, of lazarettos would be abolished, and rational measures of sanitary improvement would go on to extinguish the disease. It is satisfactory to know that a British commission is about to proceed to study cholera in India. One, at least, however, of those named upon it is, from his antecedents, sure to see microbes chiefly; and one must see some things besides microbes to reach valid scientific conclusions on so large and many-sided a subject.

HENRY HARTSHORNE, M.D.

PHILADELPHIA, August 26, 1884.

## OBITUARY.

### SURGEON JOSEPH JANVIER WOODWARD, U. S. A.

BREVET LIEUTENANT-COLONEL JOSEPH JANVIER WOODWARD, Surgeon, U. S. Army, who died near Philadelphia, on Sunday, August 17, 1884, at 1 P.M., was born in Philadelphia, October 30, 1833, and at the time of his death was not quite fifty-one years of age. He was educated at the Central High School of that city, and, in 1850, received the degree of A. B. He devoted himself to the study of medicine, and graduated from the University of Pennsylvania in 1853. Two years later, in 1855, he received the degree of A. M. from the Central High School, acting as the valedictorian of his class. Immediately after his graduation, he entered energetically upon the practice of his profession in his native city, devoting a large portion of his time to that branch in which he afterwards achieved such a decided success—the microscopical investigation of pathological anatomy, and of kindred subjects. On May 17, 1858, he read before the Biological Department of the Academy of Natural Sciences, in Philadelphia, a paper "On the Minute Anatomy of Three Cases of Cysto-carcinoma," which will be found on page 54 of THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, for July, 1858. Other papers, read before the same Society, followed rapidly: "Remarks on Anatomical Diagnosis of Cancer," November 15, 1858; "On Suppuration in Cancerous Growths," March 21, 1859; "On Errors in the Anatomical Diagnosis of Cancer," December 4, 1859; and "On a Secondary Cancer of the Axilla," January 16, 1860.

When the war broke out in 1861, he offered his services to his country, and entered the Army as Assistant Surgeon, U. S. A., on August 5, 1861. He was with the Second Artillery, in the Army of the Potomac, until May 19, 1862, when he was assigned to duty in the office of the Surgeon-General in Washington, where he located and organized several hospitals, and, for a brief period, was in charge of the Patent Office Hospital. Relieved from this duty, he was placed in charge of the Pension Division of the Surgeon-General's Office and of the Medical Section of the Army Medical Museum, which had then been opened for the collection of specimens of morbid anatomy, surgical or medical. At the same time, the task was assigned to him of collecting the material for the *medical* portion of the *Medical and Surgical History of the War*, while his colleague, Dr. Otis, had charge of the collection of material for the *surgical* history and the surgical branches of the Museum collection. Both these officers prepared reports on the material available, which were published as "Circular No. 6" of the Surgeon-General's Office, on November 1, 1865. The second half of the circular, which was very favorably received by military surgeons, was prepared by Dr. Woodward. In the following year, he made a report "On Epidemic Cholera in the Army of the United States during the Year 1866," which appeared as "Circular No. 5," Surgeon-General's Office,

on May 4, 1867, and which was followed in June, 1868, by "Circular No. 1:" "Report on Epidemic Cholera and Yellow Fever in the Army of the United States during the Year 1867."

In the meantime, the collection of the material for the *Medical History of the War* had progressed rapidly, and, on November 12, 1870, he issued his first volume of 726 pages, quarto, containing a series of statistical tables, presenting a summary view of the facts embodied in the monthly reports made to the Surgeon-General with regard to the sickness of the Army, the deaths and the discharges on surgeon's certificate of disability.

After the close of the war, he had returned with increased fervor to his investigations in microscopy, and especially in photo-micrography, and the results of his experiments, which made him famous in Europe as well as at home, were given in a series of publications which followed each other in rapid succession:

*Report on the Magnesium and Electric Lights as applied to Photo-micrography.* 6 pp., 4to., 11 photographs. Surgeon-General's Office, 1870. *Report on the Oxy-calcium Light as applied to Photo-micrography.* 3 pp., 4to., 2 photographs. Surgeon-General's Office, 1870. *Report on an Improved Method of Photographing Histological Preparations by Sunlight.* 10 pp., 4to., 11 photographs. Surgeon-General's Office, 1870. *Report on the Histology of Minute Bloodvessels.* 8 pp., 4to., 11 photographs. Surgeon-General's Office, 1871. *Report on the Minute Anatomy of Two Cases of Cancer.* 10 pp., 4to., 2 photo-lithographs. Surgeon-General's Office, 1872. *Memorandum on Pleurosigma Angulatum and Pleurosigma Formosum.* 4 pp., 4to., 8 photographs. Surgeon-General's Office, 1871. *Memorandum on Surirella Gemma.* 1 p., 4to., 2 photographs. Surgeon-General's Office, 1871. *Memorandum on the Test Podura.* 3 pp., 4to., 5 photographs. Surgeon-General's Office, 1871. *Memorandum on Amphipleura Pellucida.* 1 p., 4to., 2 photographs. Surgeon-General's Office, 1871. *Memorandum on the Nineteen-band Test-plate of Nobert.* 4 pp., 4to., 9 photographs. Surgeon-General's Office, 1872. *Four Letters to the Surgeon-General, accompanying Photographs of the Mosquito, certain Parasites, the Proboscides of certain Flies, and Miscellaneous Photographs of Insects and Parts of Insects.* 8 pp., 4to., 35 photographs. Surgeon-General's Office, 1872. *Remarks on Photographic Micrometry in Trans. of the American Medical Association, 1876; Application of Photography to Micrometry, with Special Reference to the Micrometry of Blood in Criminal Cases. Ibid.*

In 1876 he had charge of the representation of the Medical Department of the United States Army at the International Exhibition at Philadelphia, and the success of the medical exhibition was mainly due to his energy and activity. During the succeeding two years he devoted himself entirely to the preparation of the second *medical* volume, which appeared on March 25, 1879. The work treats on the "Alvine Fluxes," and will be a lasting testimony of the zeal and indomitable perseverence of the author. In careful and painstaking research of the literature of the subject, it surpasses all previous publications. The anxious pursuit of this work had gradually undermined his constitution, never very robust, and, in the summer of 1880, he went to Europe to regain his health. He returned in a somewhat improved condition, but unfortunately was again prostrated by a fall from his horse in the spring of 1881, by which he fractured his leg. Barely recovered from this accident, he was called, in July, 1881, to the bedside of the lamented President Garfield. His quiet and patient services, frequently under a flood of abuse from professional as well as non-professional journals, in this new field of action are too recent to need to be recalled. We will only here state that he kept full notes of daily, even hourly observations of the patient's condition, which he intended to publish as a defence, if such were needed, at some future time. Sickness and death have despoiled him of this opportunity.

Time and space have allowed us to refer only to a few of the numerous publications of this indefatigable worker. A close observer, tenacious in his convictions of what he conceived to be right, writing to the point without flourish or embellishment, fearless in the expression of his views, courting rather than avoiding criticism, he was ever ready to enter the lists in defence of his opinion.

Dr. Woodward's last editorial work was his obituary notice of his colleague Otis, which appeared in the AMERICAN JOURNAL OF THE MEDICAL SCIENCES, July, 1881.

"For faithful and meritorious services during the War," Dr. Woodward received the brevet ranks of Captain, Major, and Lieutenant-Colonel, and on June 26, 1876, was promoted to the rank of Major and Surgeon. He became a member of the American Medical Association in 1865, and in 1881 was chosen its President, being the first medical officer from the Army to whom this honor was accorded. He was a member of the College of Physicians of Philadelphia, of the National Academy of Sciences, of the Philosophical Society of Washington, an honorary member of the Royal Microscopical Society and of the Quekett Club of London, of the Liverpool and Belgian Societies of Microscopy, and of many other societies in this country as well as in Europe.

His decease adds another name to the list of prominent men connected with the Surgeon-General's Office, whom death has removed within the brief period of three and a half years. On February 23, 1881, occurred the death of G. A. Otis, the famous author of the history of the surgery of the war. Two years later, on April 5, 1883, Brigadier General J. K. Barnes, who had watched by the bedsides of two martyred Presidents, passed away, and, on October 10, of the same year, Surgeon-General C. H. Crane, at whose suggestion both Woodward and Otis had been selected as the compilers of the Medical and Surgical History, died after a brief illness.

## NEWS ITEMS.

YELLOW FEVER ITEMS.—The case of yellow fever taken off the U. S. S. "Galena," at Key West, Fla., has recovered, and no further cases of the disease have appeared, either on the "Galena" or at Key West.

Sanitary Inspector Ross, stationed at Nogales, Arizona, reports that he examined 149 passengers on the Sonora Railroad, from the infected districts of Mexico, fumigated their baggage, and quarantined 29 through passengers to the United States. He reports 9 deaths from

yellow fever at Hermosillo on the 10th inst., 6 on the 11th, and 4 on the 12th, among them a Catholic bishop.

The U. S. Consul at San Juan, Porto Rico, reports the death by yellow fever of the Governor-General of the Province. He adds, the yellow fever is much more fatal this season than for many years previous. Usually the disease has been confined to unacclimated Spanish residents just arrived, and to the troops, but for the past two months there have been very many fatal cases among the Creoles of the island, and within the last ten days there have been three deaths of Spanish officers, besides the Governor-General, holding high grades in the army. The epidemic, he says, is not confined to the Capital, but prevails with more or less fatality in the principal ports and towns of the whole province.

THE NATURE OF CHOLERA AND PRECAUTIONS TO BE OBSERVED IN TIME OF CHOLERA.—The following rules drawn up by DRS. KOCH, SKRZECZKA, and VON PETTENKOFER, the Commission of experts appointed by the Prussian Board of Health, have just been officially promulgated:

Cholera is propagated by intercourse between people, and the infectious material clings, without exception, to men and the articles with which they come in immediate contact. The spread of the disease will be very greatly promoted, as experience has often shown, if, on its appearance in large places, the inhabitants take to flight and spread the germ of the disease far and near. This especially dangerous exodus of the population must be severely prohibited. Instead of thus leaving the infected place, it is easier to protect one's self from cholera by a proper mode of living and by observing the following precautionary measures, which cannot be done so well while travelling or away from home:

Every one, who would not endanger himself by receiving the germ of the disease into his house, should keep away from them those who come from stricken places. As soon as the first case of cholera appears in a place, the persons coming from that place must be considered as in all probability bringing the disease germ with them.

In time of cholera one should lead as regular a life as possible. Experience has shown that all troubles of digestion especially favor cholera. One should, therefore, particularly avoid whatever may cause digestive troubles, as excesses in eating and drinking, and the use of food not easily digested.

Everything which causes diarrhœa should be avoided. As soon as symptoms of diarrhœa appear a physician should be sent for.

No food should be used which comes from a house in which cholera rages. Food, the origin of which is uncertain, should only be used after being cooked. The use of uncooked milk is to be especially avoided.

All water which is fouled by human waste is to be strictly avoided. Water which comes from surface wells in inhabited places, is to be regarded with suspicion, as is also water from swamps, tanks, streams, and small rivers. Water is especially to be regarded as dangerous which has been in any way contaminated by cholera dejecta. It should be particularly observed, also, that water which is used for cleaning vessels and soiled clothes is not thrown into wells and watercourses, or in their vicinity. Since it is impossible to recognize contaminated water, only water which has been previously boiled should be used. These remarks are to be applied not only to water for drinking purposes, but to that which is used about the house for any purpose, since the infecting principle may be conveyed from the human body to the water used in the kitchen for washing and cooking food, and for laundry purposes.

People are especially warned against the opinion that the drinking water alone can act as the bearer of the infecting material, and that one may think himself completely guarded if unsuspicious or boiled water alone be used.

Every cholera patient may be considered a disease centre, and it is therefore advisable that the patient should not be cared for at home, but should be carried to a hospital. If this is not practicable, all unnecessary intercourse with the patient should be strictly avoided.

No one should visit a house in which there is cholera, unless his duty calls him there, nor such houses as were visited by the disease in former epidemics of cholera. Nor should one go to places, in time of cholera, in which large numbers of people are gathered (yearly at fairs, places of amusement, etc.).

No food or drink should be taken in rooms in which there are cholera patients. Clothes or linen soiled by discharges of cholera patients should be burned or boiled immediately, or placed in a 5 per cent. solution of carbolic acid for twenty-four hours. The discharges from cholera patients must, as soon as possible, be placed in vessels which contain a 5 per cent. solution of carbolic acid; and the vessels should be washed out with this solution when emptied. The discharges mixed with this solution may be thrown into necessaries or water-closets, but care must be taken that the discharges are not thrown into wells or into streams the water of which is used.

The floors and all articles soiled by cholera discharges must be cleaned with dry cloths or rags, which must then be burned or placed in a 5 per cent. solution of carbolic acid. Fverything which comes in contact with the patient which cannot be destroyed or be disinfected by boiling, or in the carbolic solution, must be rendered harmless by means of hot steam in a special place of disinfection, or kept at least six days unused in a dry, airy place. The rooms in which there are cholera patients must, whenever possible, remain uninhabited for six days, and should be aired day and night during this time, so that they may be completely dried; and they should finally be dried by artificial heat. Those who come in contact with the patient, or with the beds and clothing, should thoroughly wash their hands with soap and water, and afterwards, when possible, wash them with a 5 per cent. solution of carbolic acid. This is especially necessary when they are soiled with the discharges from the patient. People are expressly warned against eating when the hands are unclean.

When death occurs the body, whenever possible, should be removed from the house and carried to a dead-house. If the washing of the body cannot be performed in the dead-house it should be omitted. The burial should be conducted in the simplest manner possible. There should be no attendance at the house of death, and people should not attend the funeral.

The clothing, linen, and other articles used by the

patient, or for the body, should not be sent away before being certainly disinfected. It is strongly advised that when such articles are received they be sent immediately to be disinfected. Laundries should only receive linen from cholera cases which has been previously disinfected. Other precautionary measures than those here given against cholera are unreliable, and all persons are warned against the use of so-called preventive medicines in time of cholera.—*Deutsche med. Wochensch.*, August 7, 1884.

OBITUARY RECORD.—Died, at Hartford, on August 21st, aged forty years, CHARLES WALTER CHAMBERLAIN, M.D., Secretary of the State Board of Health of Connecticut. Dr. Chamberlain was educated in the arts at Brown University, and in medicine at the College of Physicians and Surgeons of New York, and graduated from the latter institution in 1871. He was for a number of years Examining Surgeon to the Pension Bureau, and was well known throughout the country as a distinguished sanitarian.

## [OFFICIAL.]

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, D. C., August 20, 1884.

In announcing to the Officers of the Medical Department the death of JOSEPH JANVIER WOODWARD, Surgeon and Brevet Lieutenant-Colonel, U. S. Army, which occurred near Philadelphia, Pa., August 17, 1884, the Surgeon-General wishes to offer his tribute of respect to the memory of the deceased, whose distinguished career and valuable services, for a period of twenty-three years, have shed lustre on the Corps, and for whose untimely loss feelings of profound regret will be shared alike by his comrades in arms and by the profession at large.

Doctor Woodward was born in Philadelphia, Pa., October 30, 1833, and was educated at the Central High School of that city, graduating with honor as Bachelor of Arts in 1850, and receiving the degree of Master of Arts from the same institution in 1855.

He graduated in medicine at the University of Pennsylvania, April, 1853; entered the Army as Assistant Surgeon, August 5, 1861; became Captain and Assistant Surgeon, July 28, 1866; Major and Surgeon, June 26, 1876. "For faithful and meritorious services during the War" he received the brevets of Captain, Major, and Lieutenant-Colonel, U. S. Army.

He was assigned to duty in this Office May 19, 1862, and from that date until the beginning of the illness which terminated in his death was intimately identified with its professional and scientific work.

While the valuable results of his life's labor are comprehended in a long list of miscellaneous publications, both professional and scientific, too familiar to the Corps to require individual mention, his greatest triumphs were won in the field of microscopical investigation in normal and pathological histology, and in his happy application of photo-micrography to the purposes of science. In these pursuits, he attained remarkable success, and achieved an enviable, world-wide reputation, leaving to science and medicine lessons of undoubted value and usefulness. Of his strictly professional work, the medical portion of the *Medical and Surgical History of the War of the Rebellion* was the crowning achievement. In the second part of this work, he developed the results of his careful investigations into the nature and pathology of the intestinal diseases which had proved so fatal in the late war. Here, also, he displayed his wonderful capacity for that minute and exhaustive research which forms so striking a feature of his writings.

As in the case of his colaborer, Otis, he yields to other hands the honor of completing his labors.

In addition to his engrossing professional duties, his restless activity of mind led him to seek recreation in his favorite studies, physics, art, and philosophy.

Endowed with a retentive memory, and of untiring industry, he acquired a vast store of information which he held available for use at will; fluent of speech, he took delight in the expression of his views and opinions both in social converse and in the arena of scientific debate.

His fund of knowledge, his strong convictions, his tenacity of opinion, and his quick perception made him a controversialist of no low order.

With such a record, it is needless to speak of his zeal, his ambition or his devotion to his profession, and especially to the reputation of the corps of which he was so bright an ornament.

Of a sensitive, highly strung, nervous organization, the confinement, anxiety, and labor to which he was subjected in his attendance upon the late President Garfield during his long illness, proved too much for a mind and body already overstrained by incessant labor, and precipitated the illness which finally terminated his life.

At the time of his death, Dr. Woodward was a member and Ex-President of the American Medical Association, a member and Ex-President of the Washington Philosophical Society, a member of the National Academy of Science, of the Association for the Advancement of Science, of the Academy of Natural Sciences of Philadelphia, and of the College of Physicians and Surgeons of Philadelphia. He was an honorary member of several American and foreign scientific, medical, and microscopical societies, and the recipient of many distinguished honors from learned bodies in this country and abroad.

R. MURRAY,
Surgeon-General, U.S.A.

### OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM AUGUST 19 TO AUGUST 25, 1884.

CRAMPTON, LOUIS W., *Captain and Assistant Surgeon.*—To report at Creedmoor, Long Island N. Y., not later than August 30th, as Competitor, and, in addition thereto, as Medical Officer of the Detachment of Competitors.—*S. O. 41, Division of the Atlantic*, August 20, 1884.

COCHRAN, J. J., *First Lieutenant and Assistant Surgeon.*—Assigned to duty at the Presidio of San Francisco, Cal.—*S. O. 81, Division of the Pacific*, August 16, 1884.

WILSON, GEO. F., *First Lieutenant and Assistant Surgeon.*—Relieved from duty at Fort Walla Walla, W. T., and to take station at Vancouver Barracks, W. T.—*S. O. 120, Department of the Columbia*, August 13, 1884.

FISHER, W. W. R., *First Lieutenant and Assistant Surgeon.*—When relieved by Assistant Surgeon Cochran to report, in person, to Commanding General Department of Arizona, for assignment to duty in that department.—*S. O. 81, C. S., Division of the Pacific.*